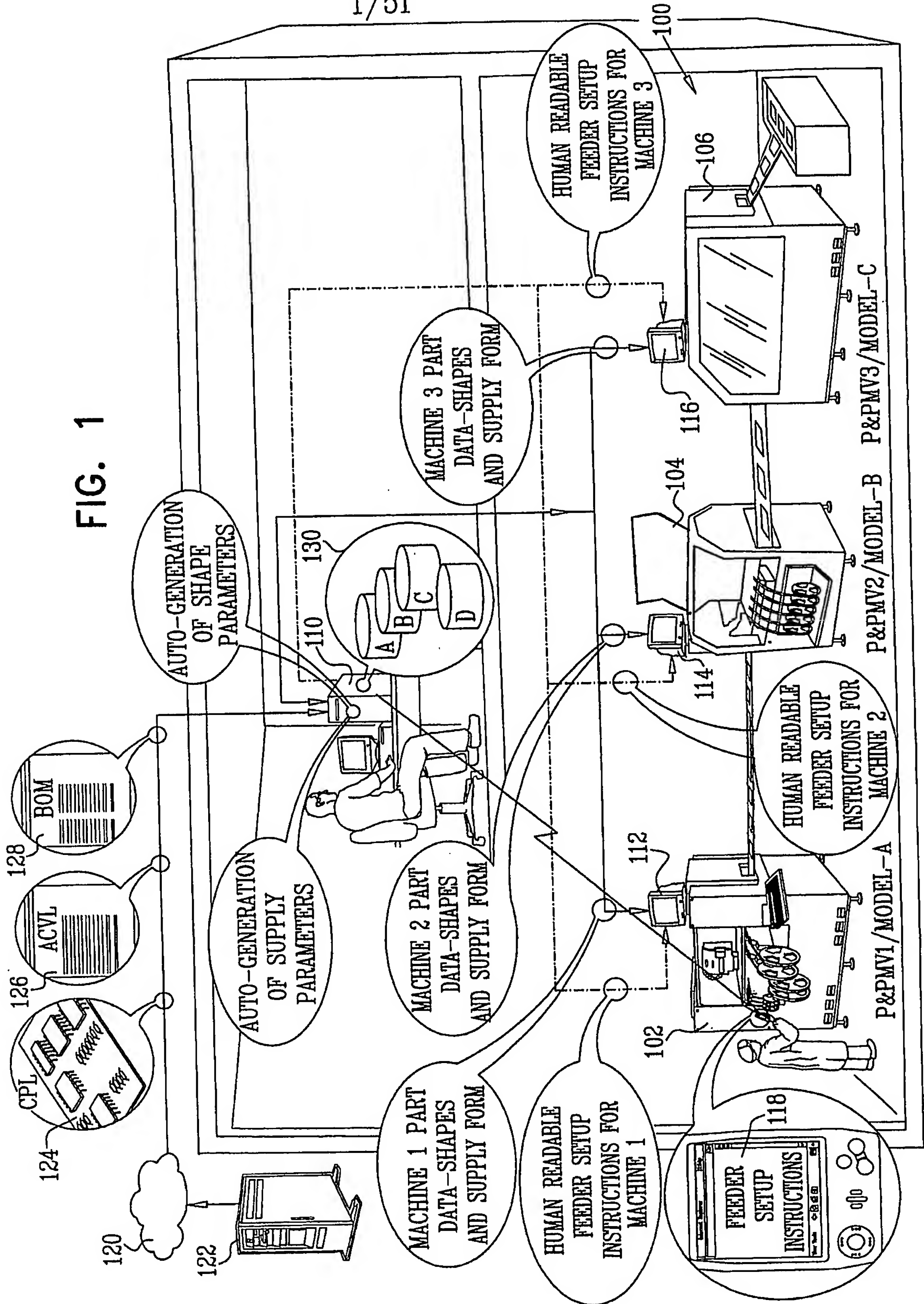


FIG. 1



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FIG. 2

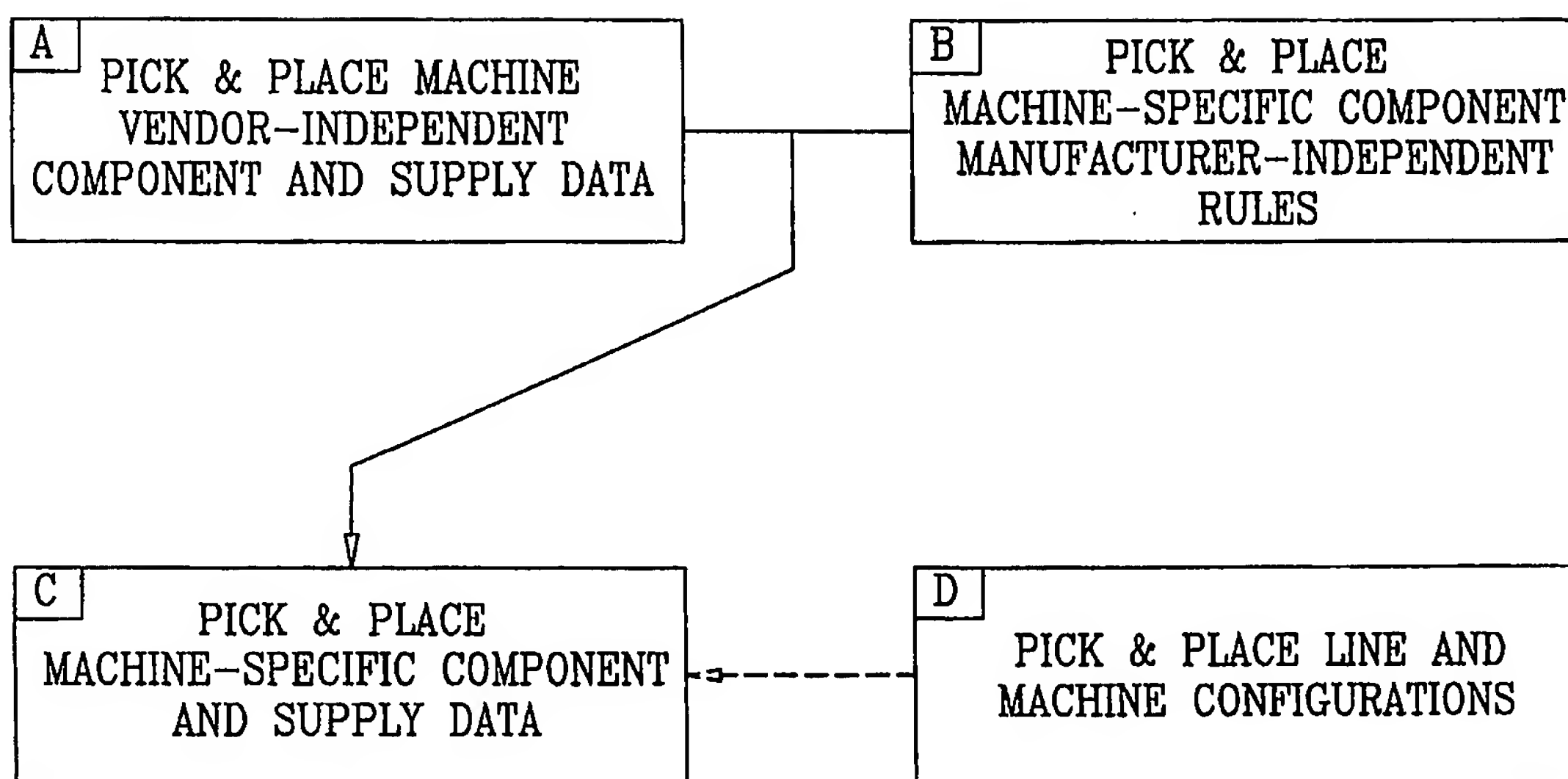


FIG. 3

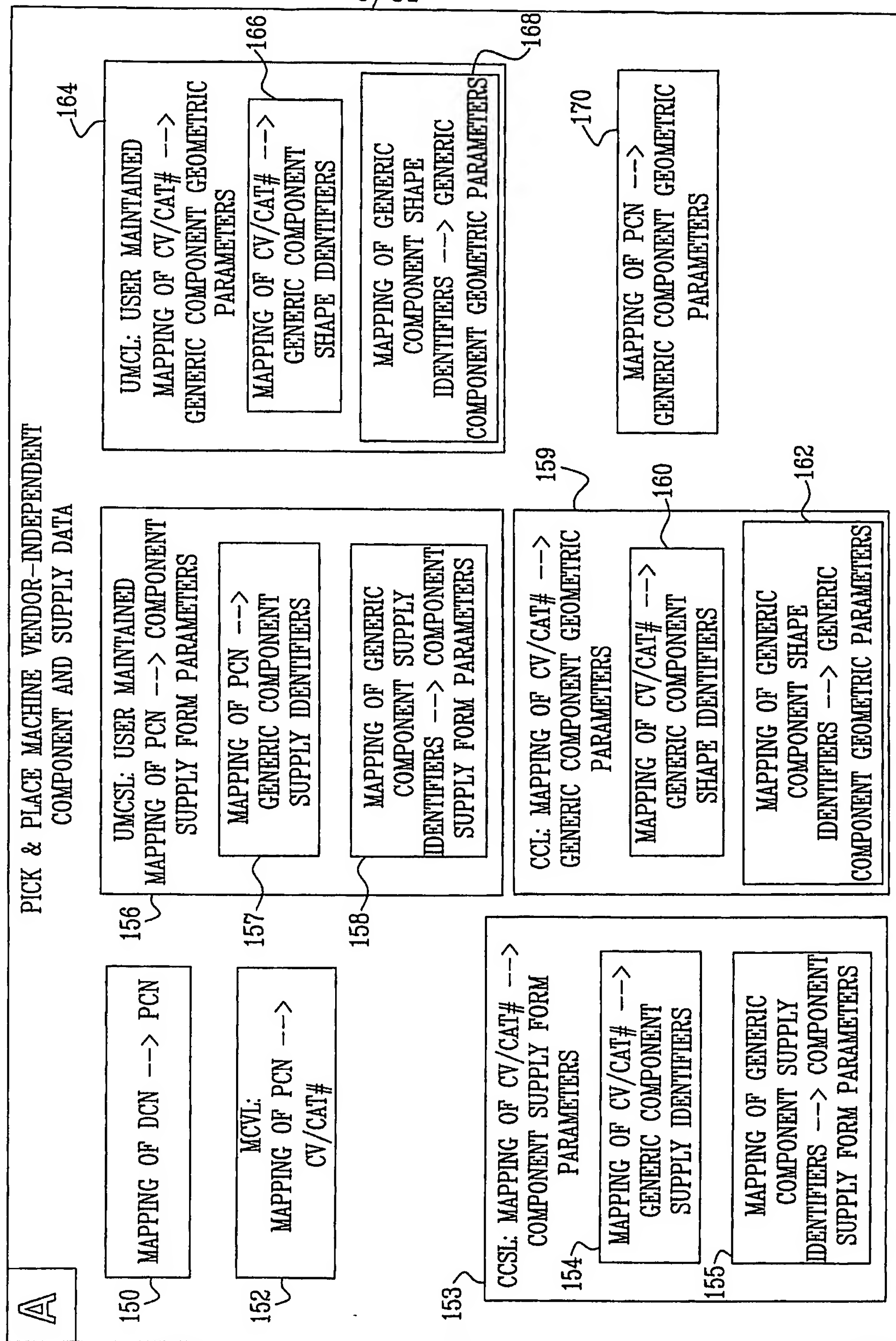


FIG. 4

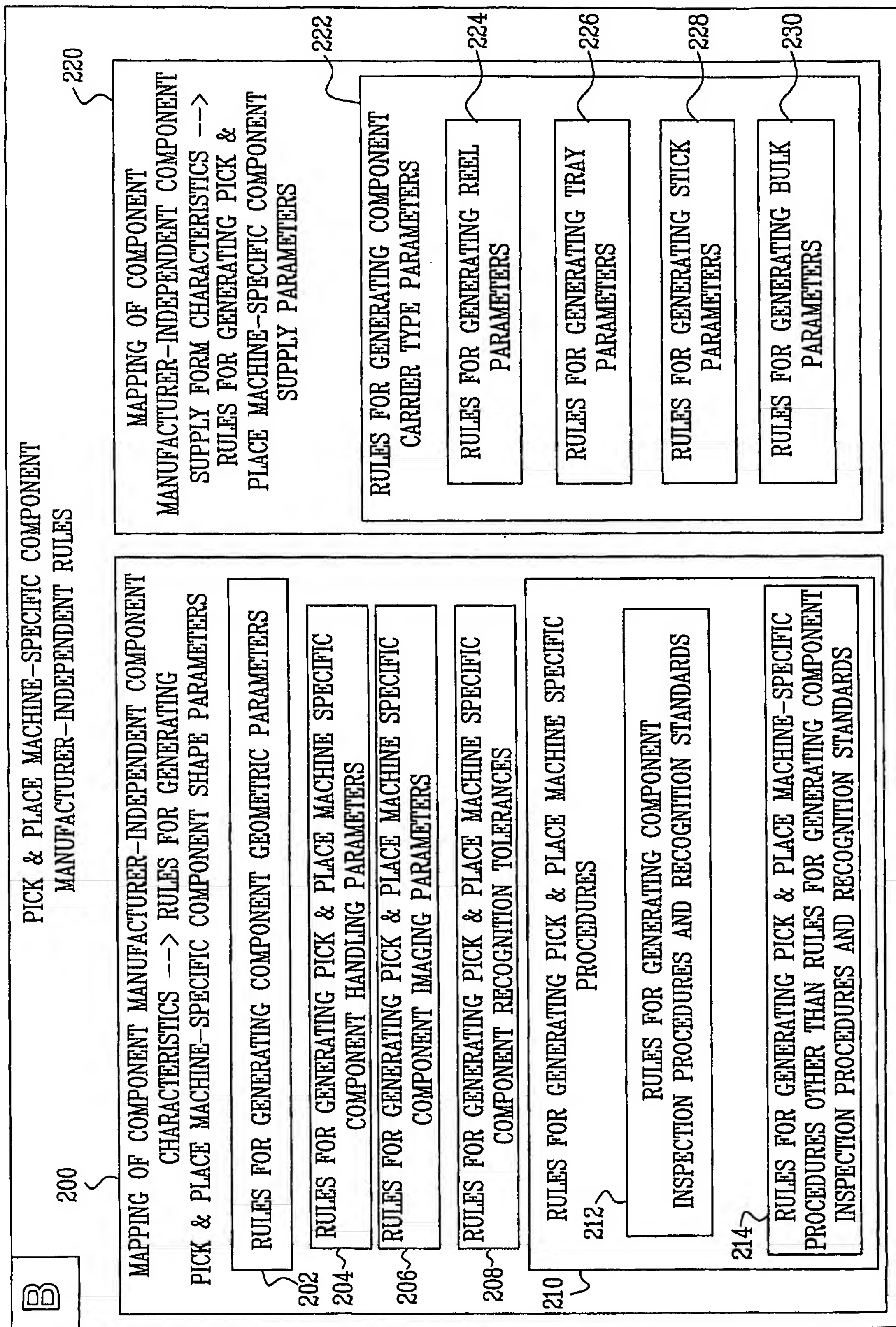


FIG. 5A

PICK & PLACE MACHINE SPECIFIC COMPONENT REEL PARAMETER	RULES FOR GENERATING PICK & PLACE MACHINE SPECIFIC COMPONENT REEL PARAMETER
MACHINE FEED	<div>232</div> $=(\text{REEL PITCH}/\text{MACHINE FEED DISTANCE})$
MACHINE SUB-FEED	<div>234</div> $\{ \text{IF (REEL PITCH - ((REEL PITCH/MACHINE FEED DISTANCE)*MACHINE FEED DISTANCE)) > 0} \}$ $\text{ THEN }=(\text{REEL PITCH - ((REEL PITCH/MACHINE FEED DISTANCE)*MACHINE FEED DISTANCE)}/\text{MACHINE SUB-FEED DISTANCE})$ $\text{ ELSE NOT RELEVANT}$
<div>• • •</div>	<div>• • •</div>
NUMBER OF SLOTS	$\text{IF } \{ (\text{TAPE WIDTH - ((TAPE WIDTH/SLOT WIDTH)*SLOT WIDTH)} == 0) \}$ $\text{ THEN }=(\text{TAPE WIDTH/SLOT WIDTH})$ $\text{ ELSE }=((\text{TAPE WIDTH/SLOT WIDTH})+1)$

FIG. 5B

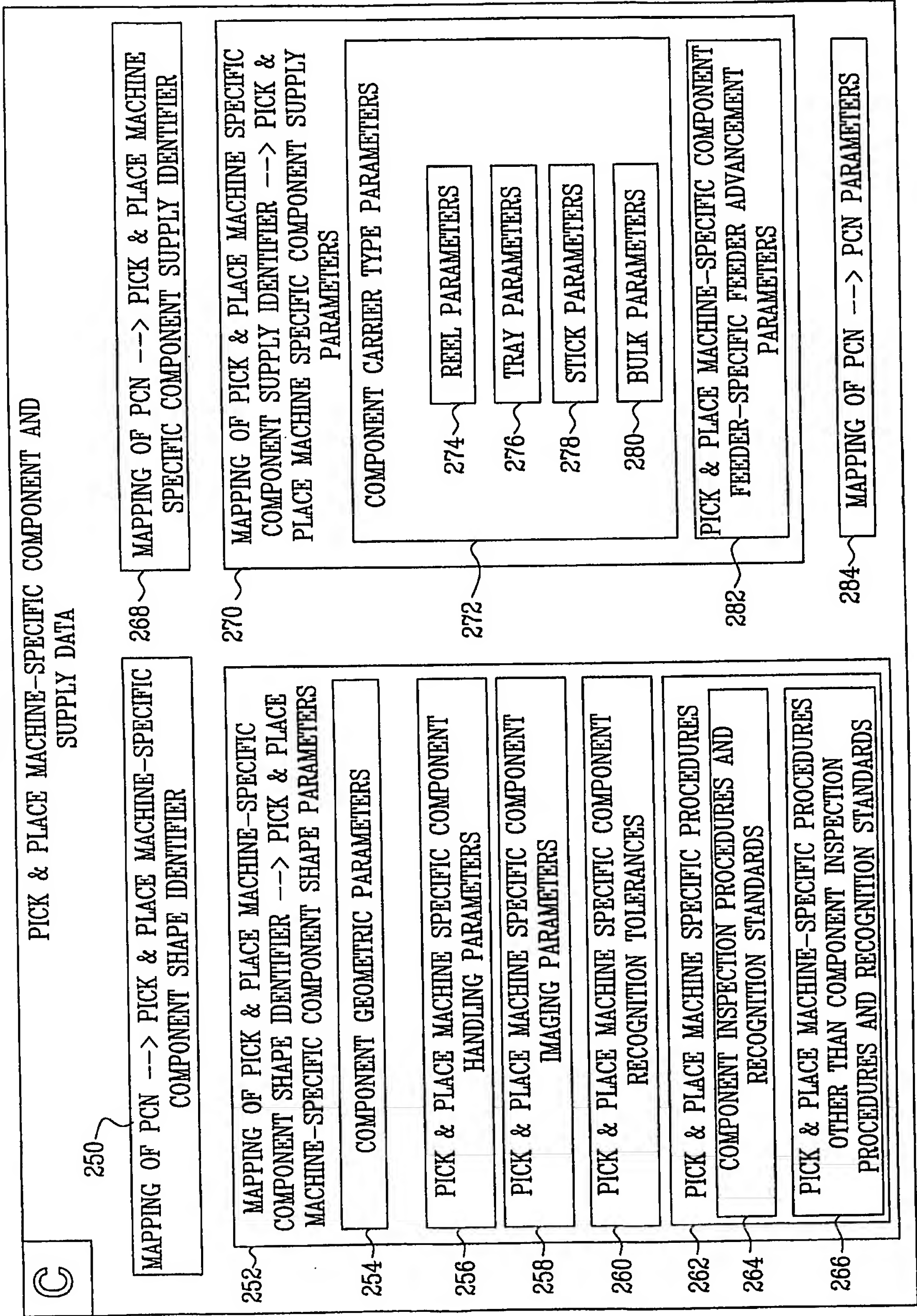
PICK & PLACE MACHINE SPECIFIC COMPONENT SHAPE PARAMETER	COMPONENT MANUFACTURER-INDEPENDENT COMPONENT CHARACTERISTIC (COMPONENT TYPE)	BGA	QFP	CONNECTORS
		=COMPONENT HEIGHT	=COMPONENT HEIGHT	=COMPONENT HEIGHT
		• • •	• • •	• • •
NAMED NOZZLE		NOT RELEVANT	NOT RELEVANT	IF {(MAX(X DIMENSION, Y DIMENSION)/MIN(X DIMENSION, Y DIMENSION))>=2 && MIN(X DIMENSION, Y DIMENSION)>=8} THEN "LARGEST NOZZLE" ELSEIF {(MAX(X DIMENSION, Y DIMENSION)/MIN(X DIMENSION, Y DIMENSION))<2 } THEN NOT RELEVANT ELSE THEN "MEDIUM NOZZLE"
MINIMUM NOZZLE		=MIN(X DIMENSION, Y DIMENSION)*0.7	=MIN(X DIMENSION, Y DIMENSION)*0.7	IF {(MAX(X DIMENSION, Y DIMENSION)/MIN(X DIMENSION, Y DIMENSION))<2} THEN =MIN(X DIMENSION, Y DIMENSION)*0.7 ELSE NOT RELEVANT
MAXIMUM NOZZLE		=MAX(X DIMENSION, Y DIMENSION)*0.95	=MAX(X DIMENSION, Y DIMENSION)*0.95	IF {(MAX(X DIMENSION, Y DIMENSION)/MIN(X DIMENSION, Y DIMENSION))<2} THEN =MIN(X DIMENSION, Y DIMENSION)*0.95 ELSE NOT RELEVANT

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FIG. 6



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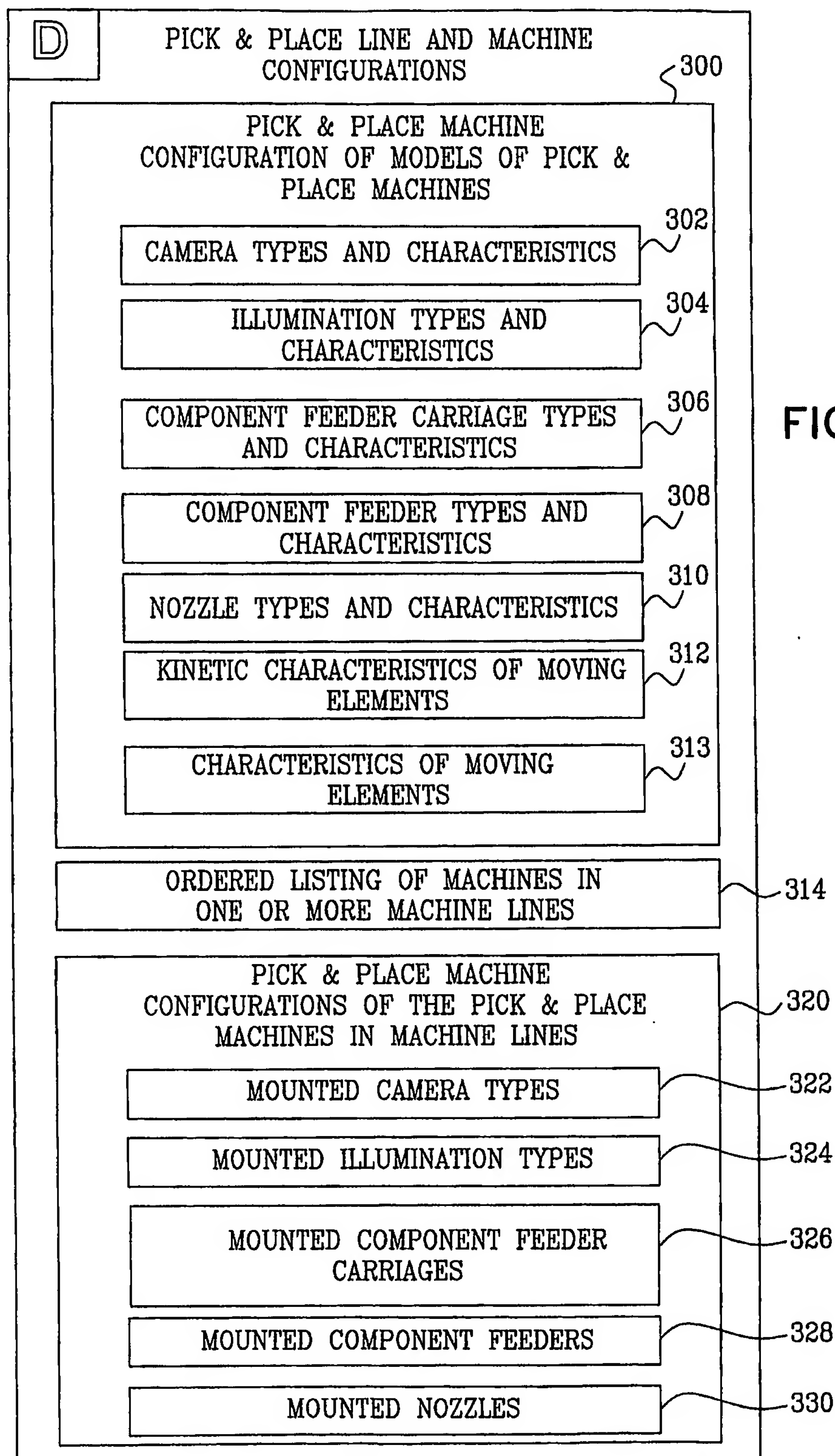
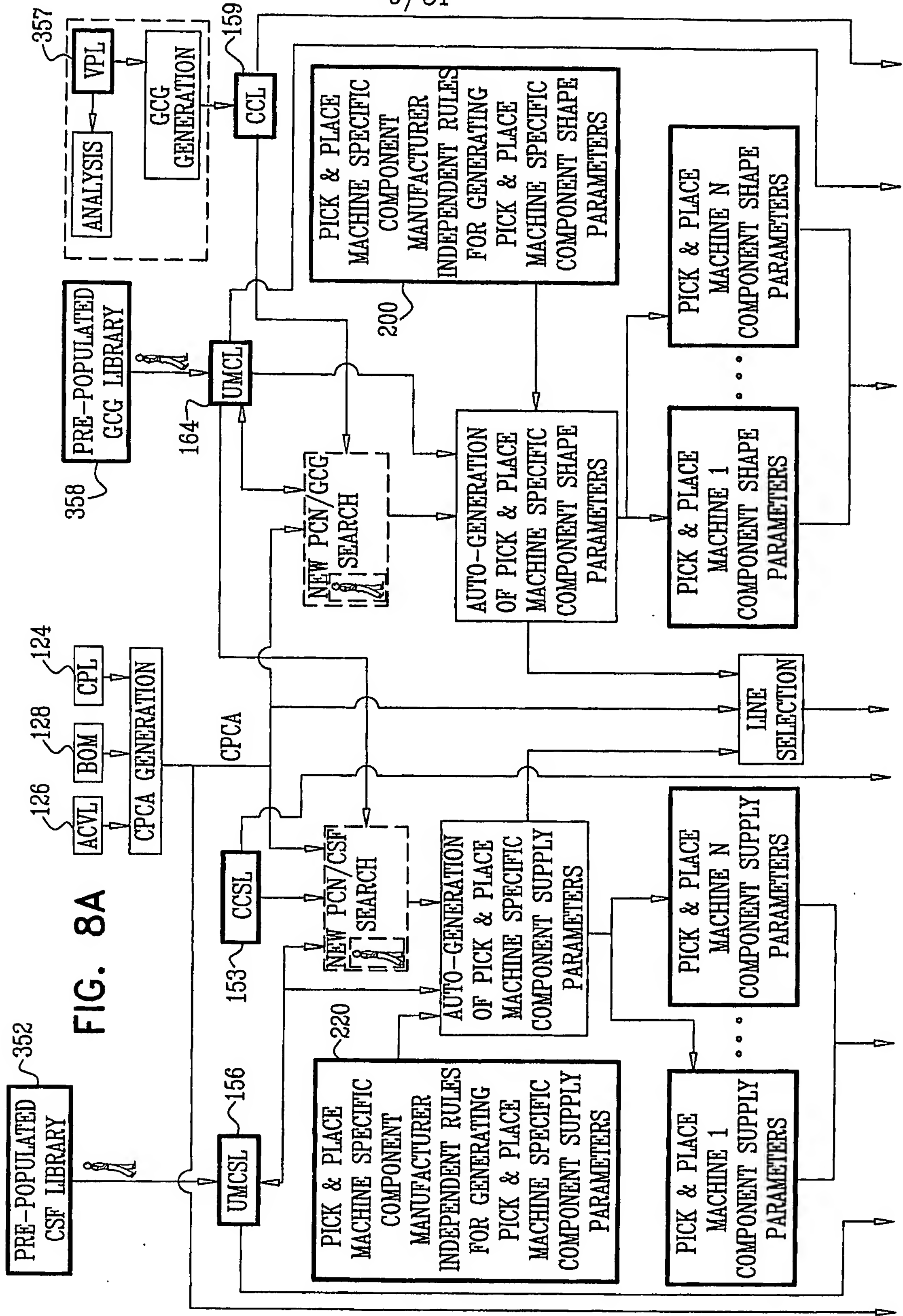


FIG. 7

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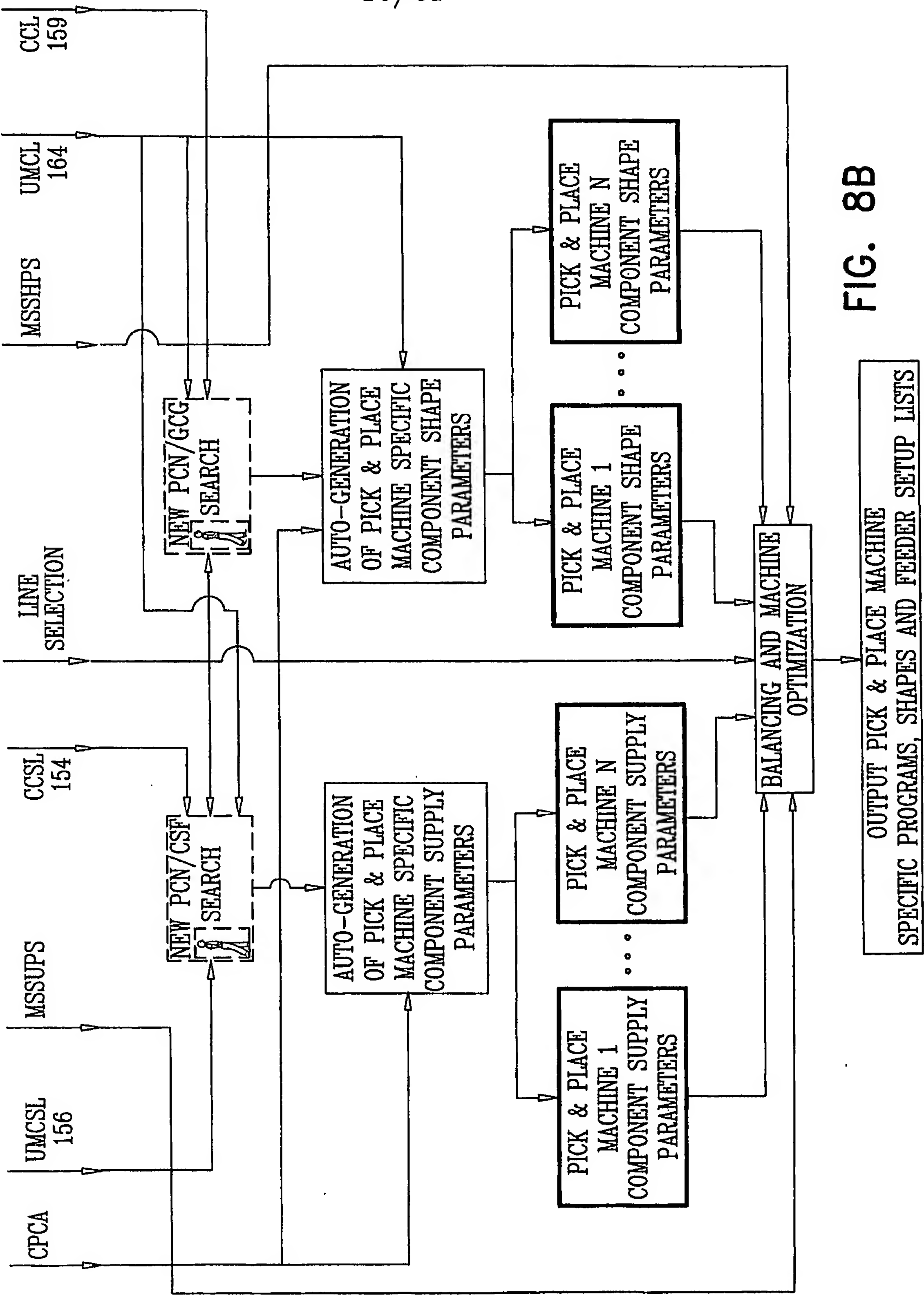
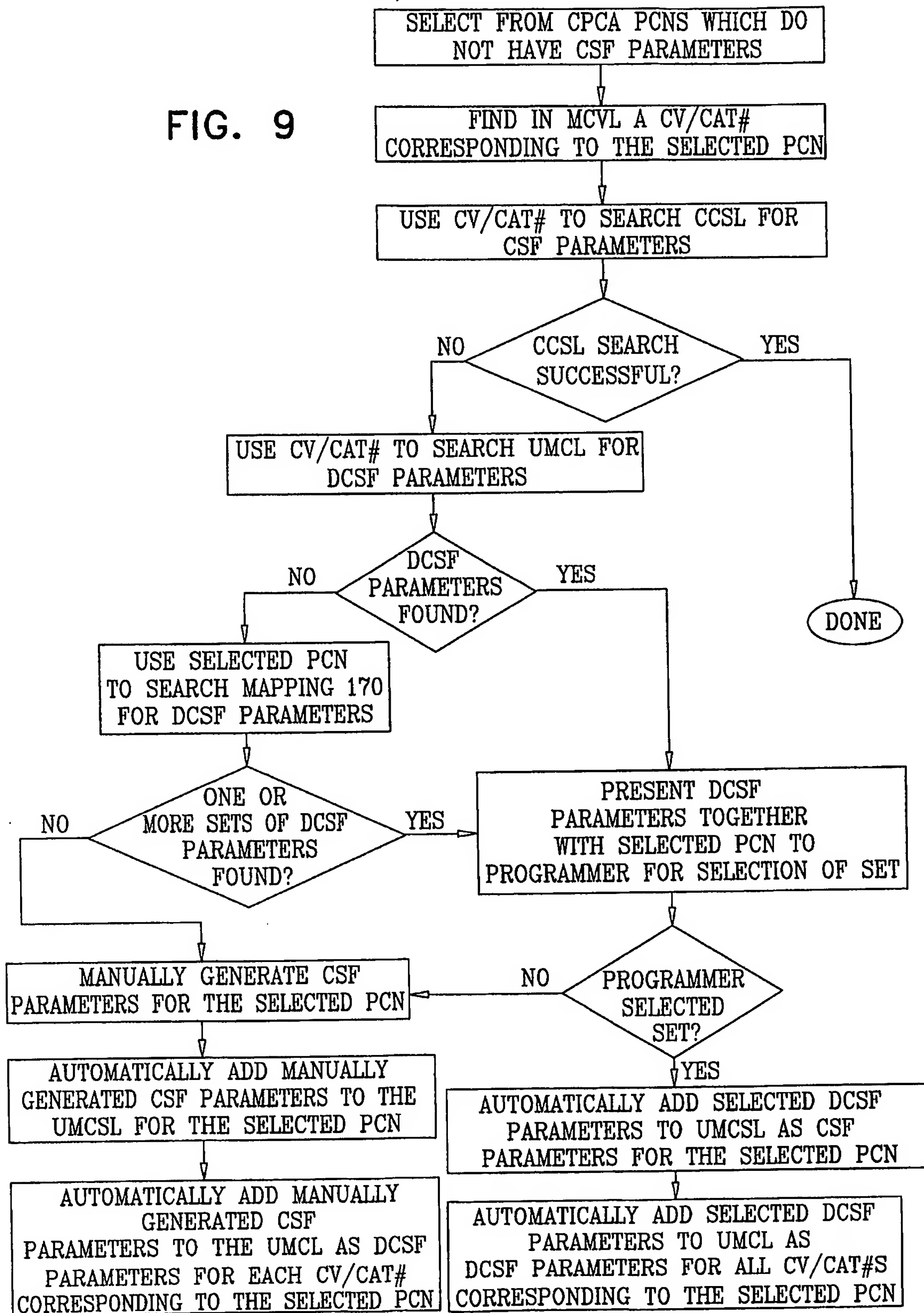


FIG. 8B

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FIG. 9



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FIG. 10

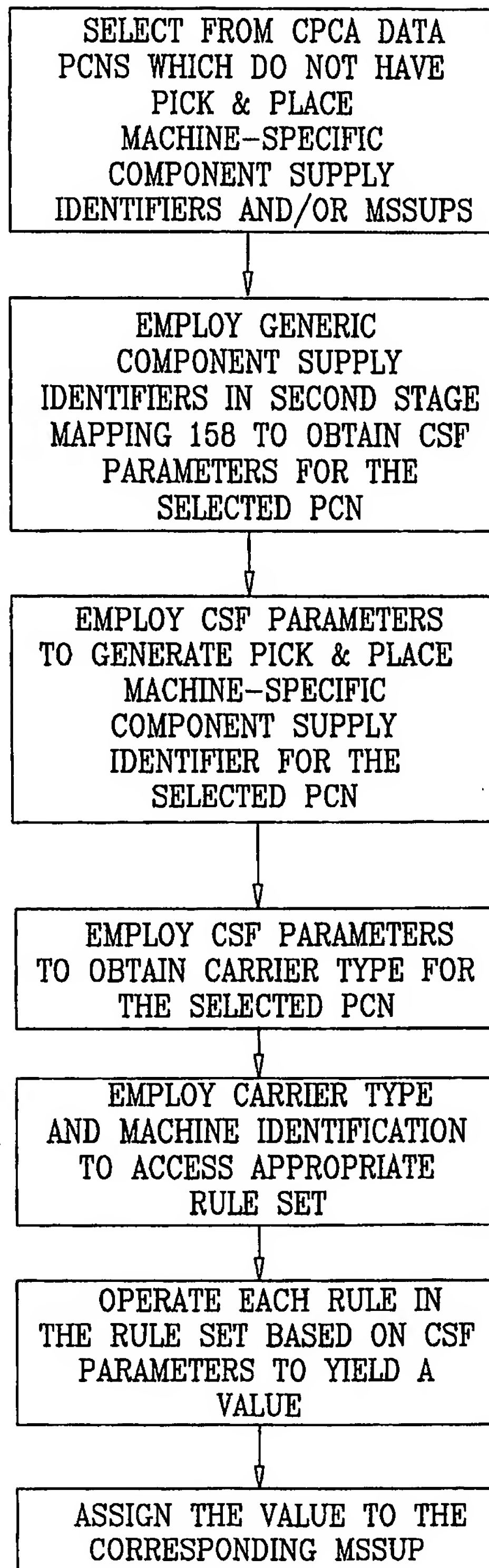


FIG. 11A

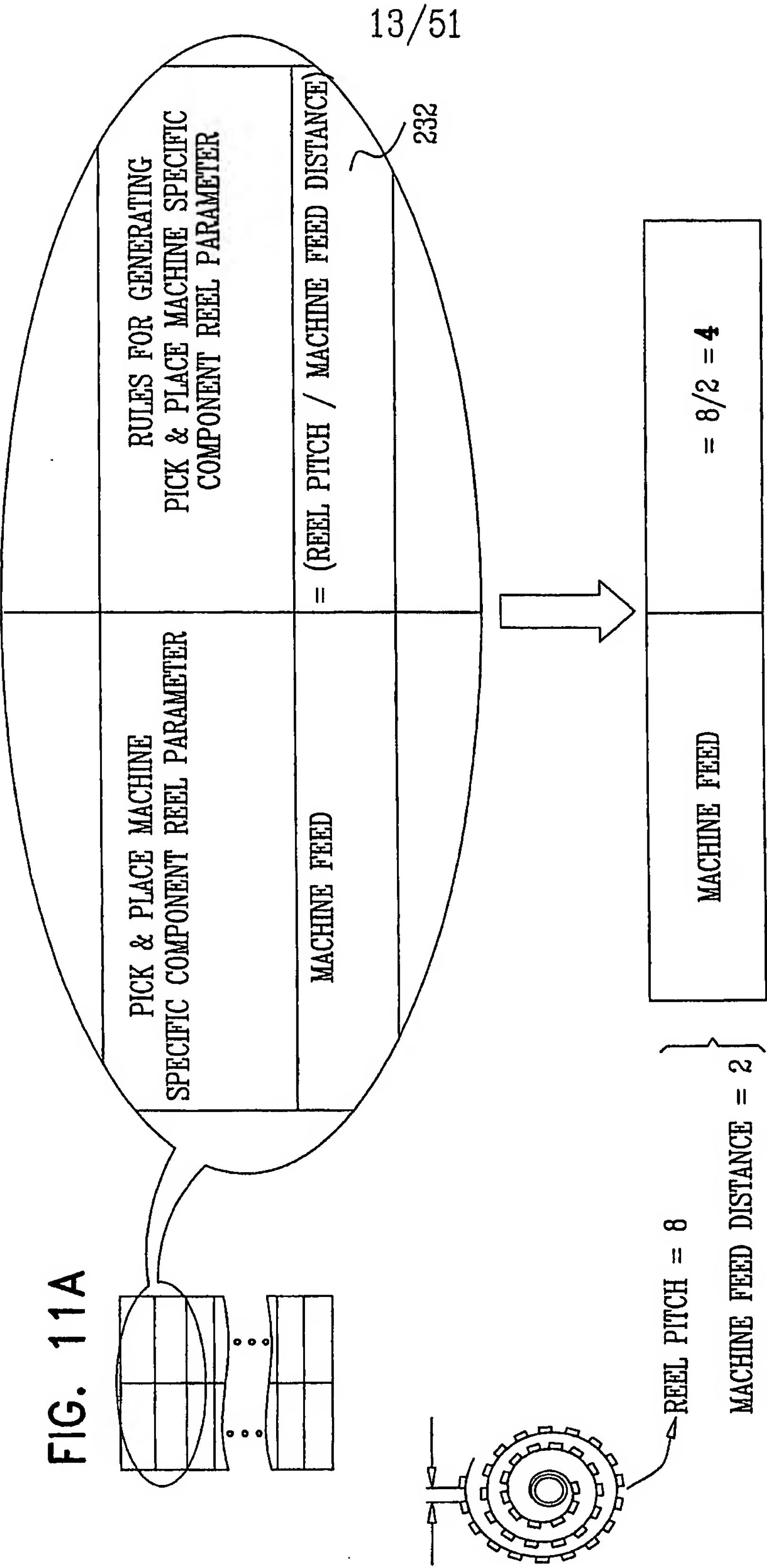
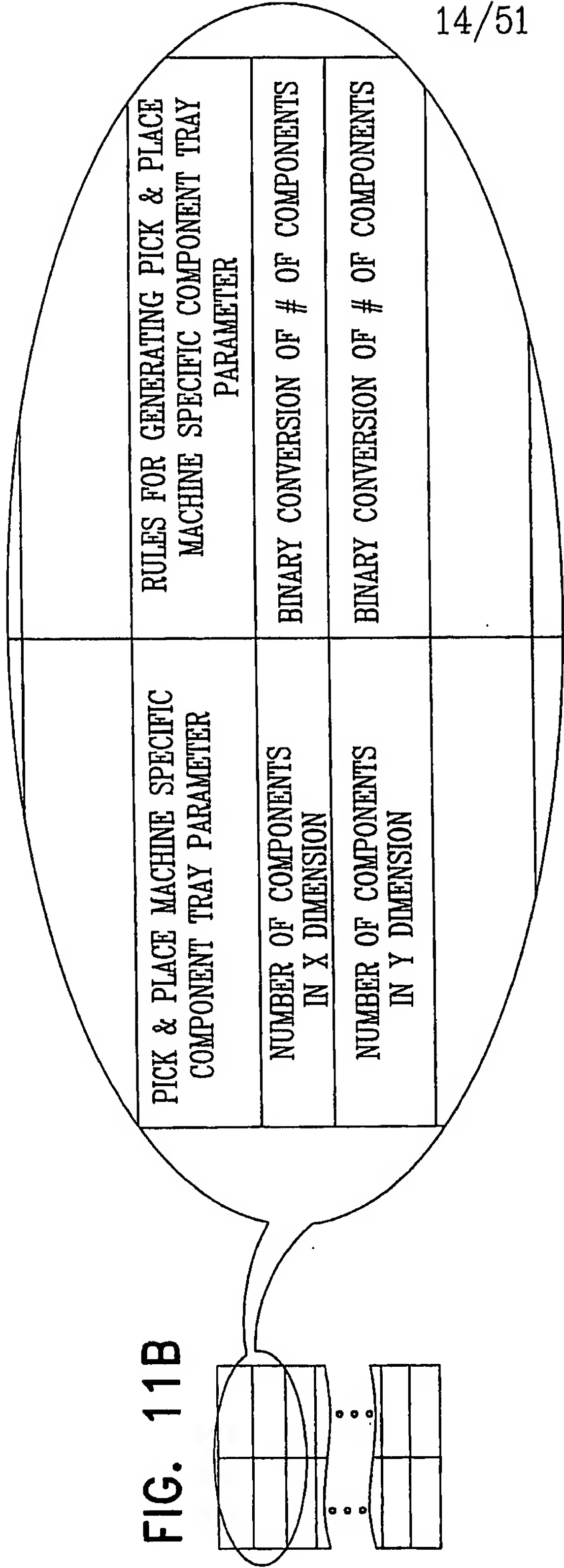
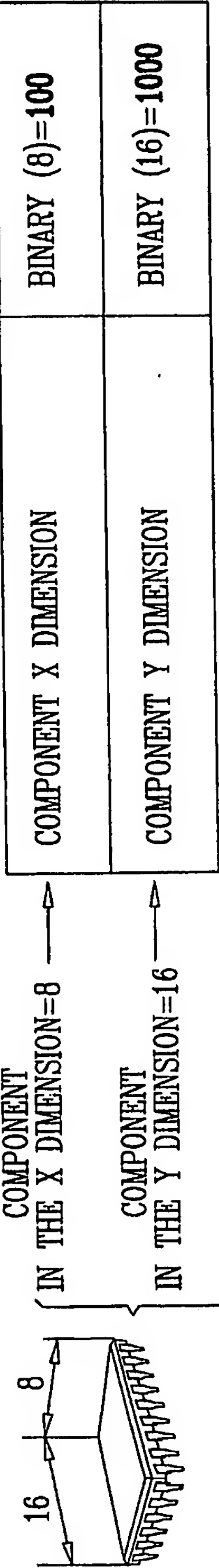
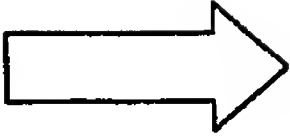
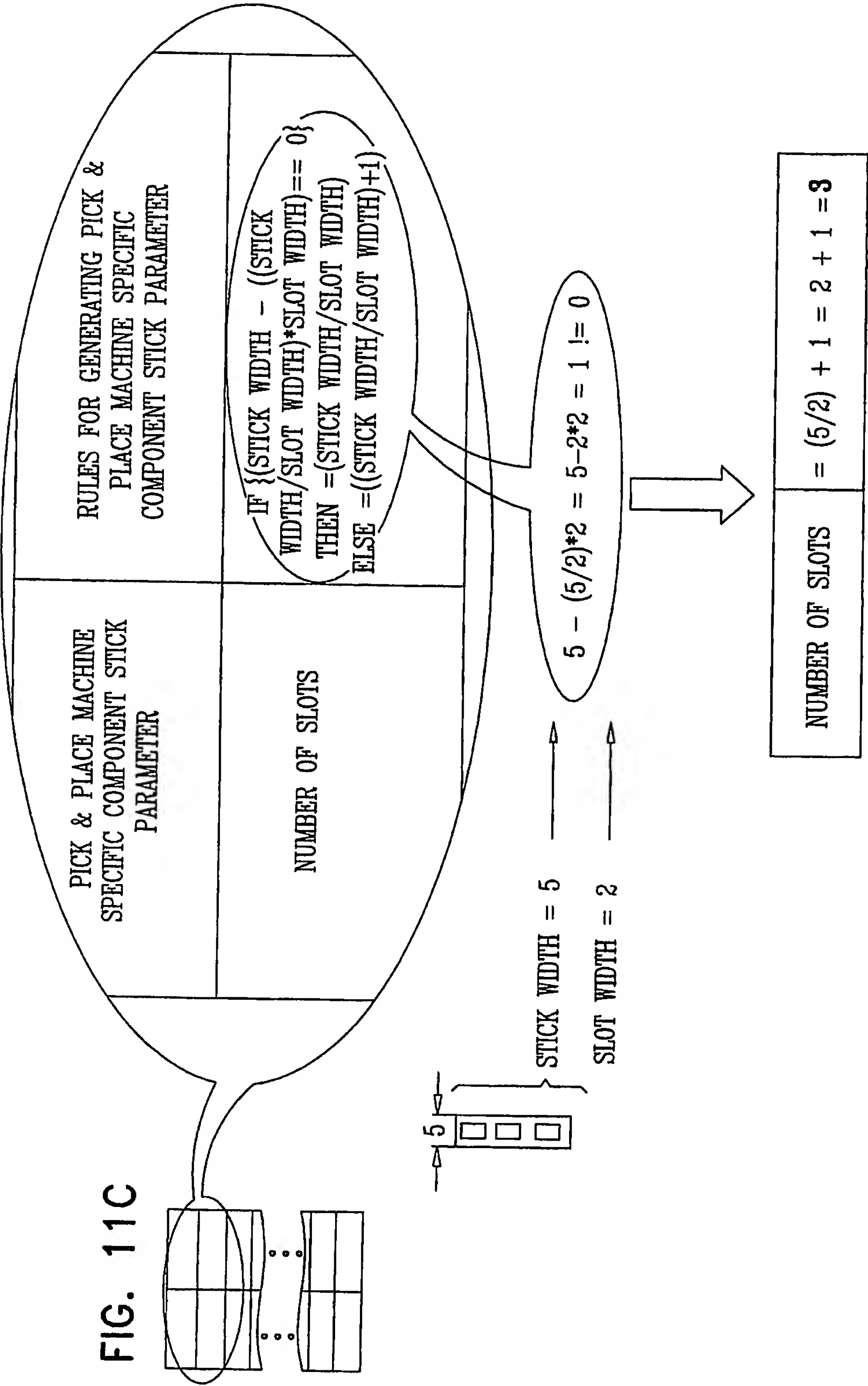


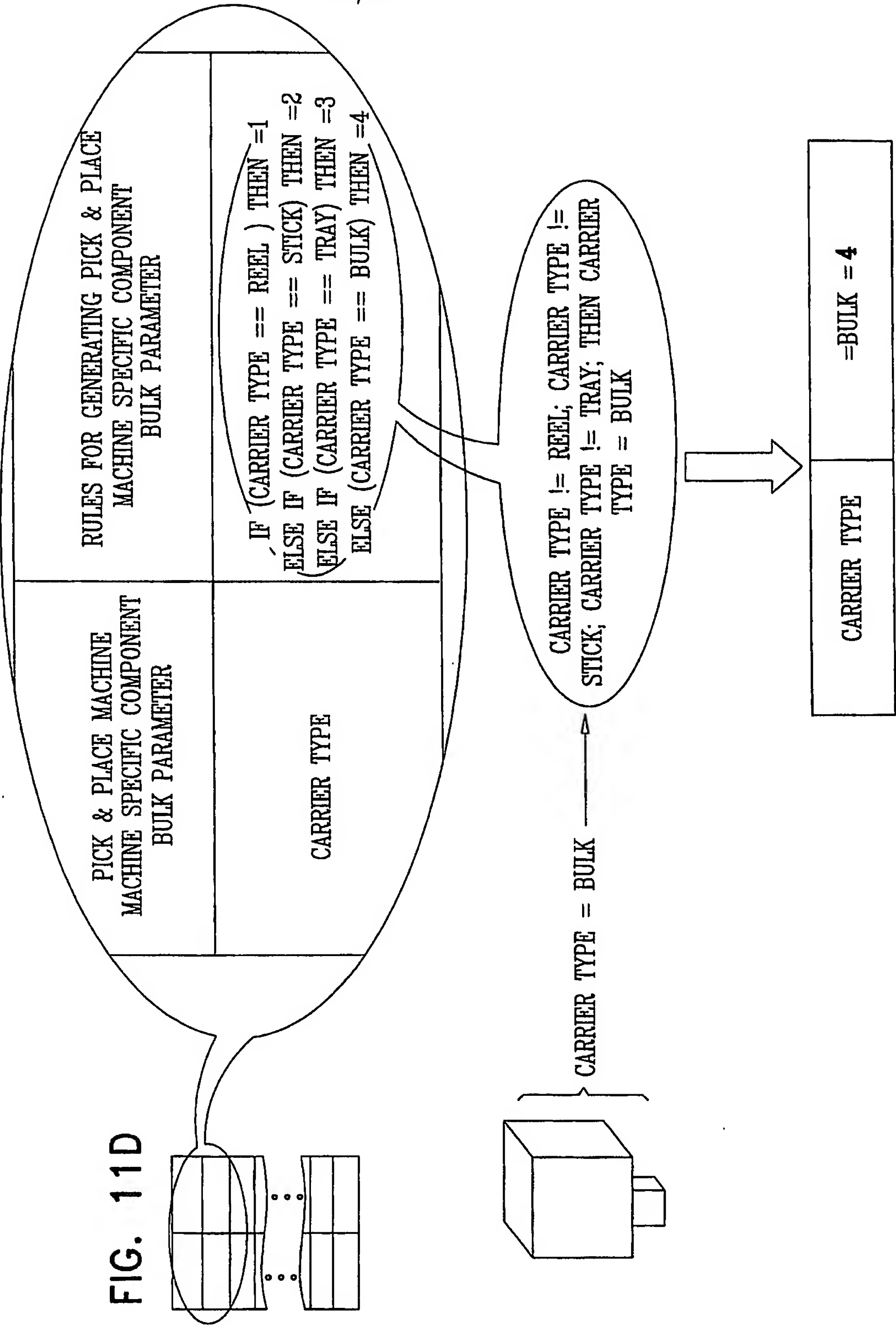
FIG. 11B



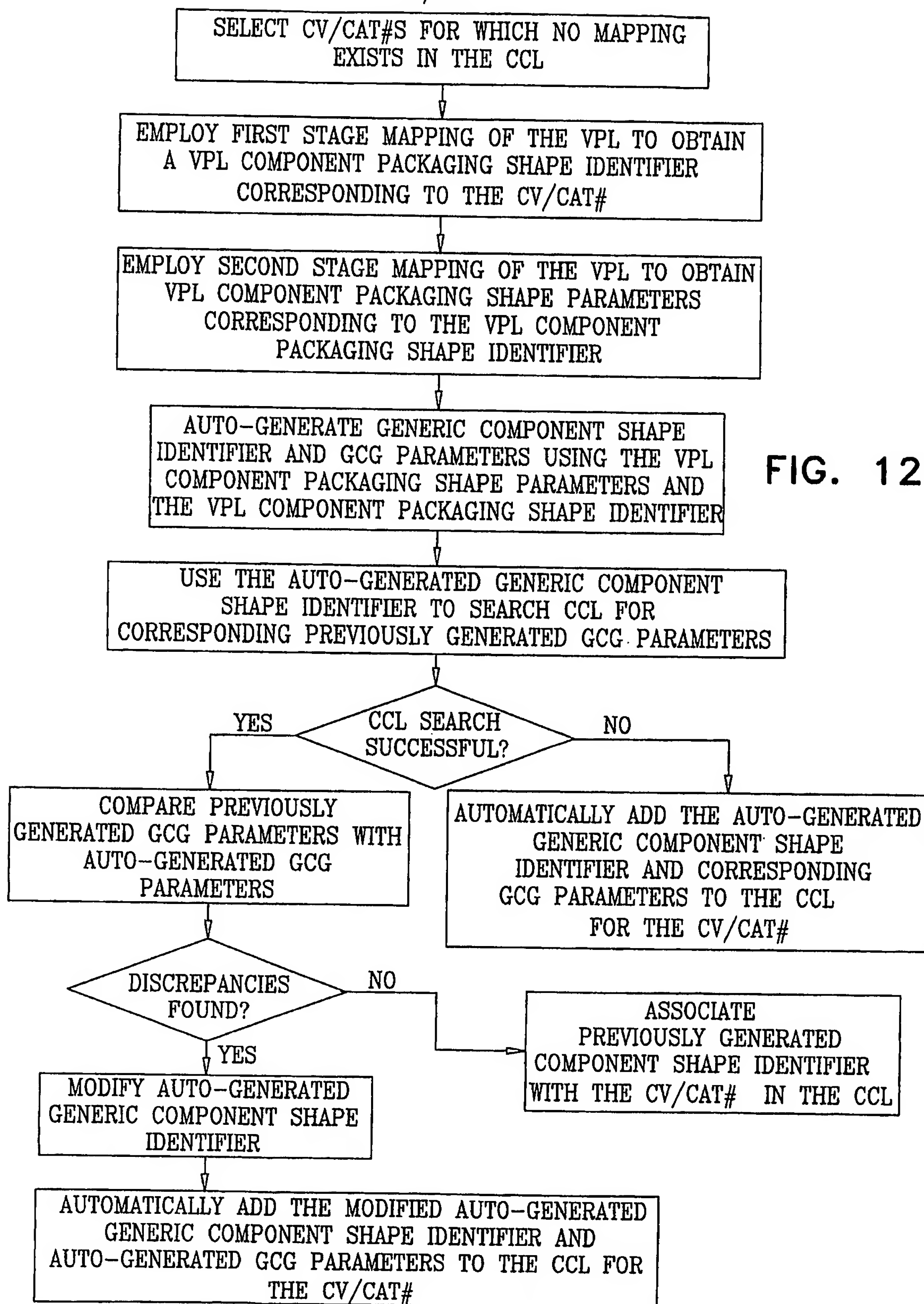
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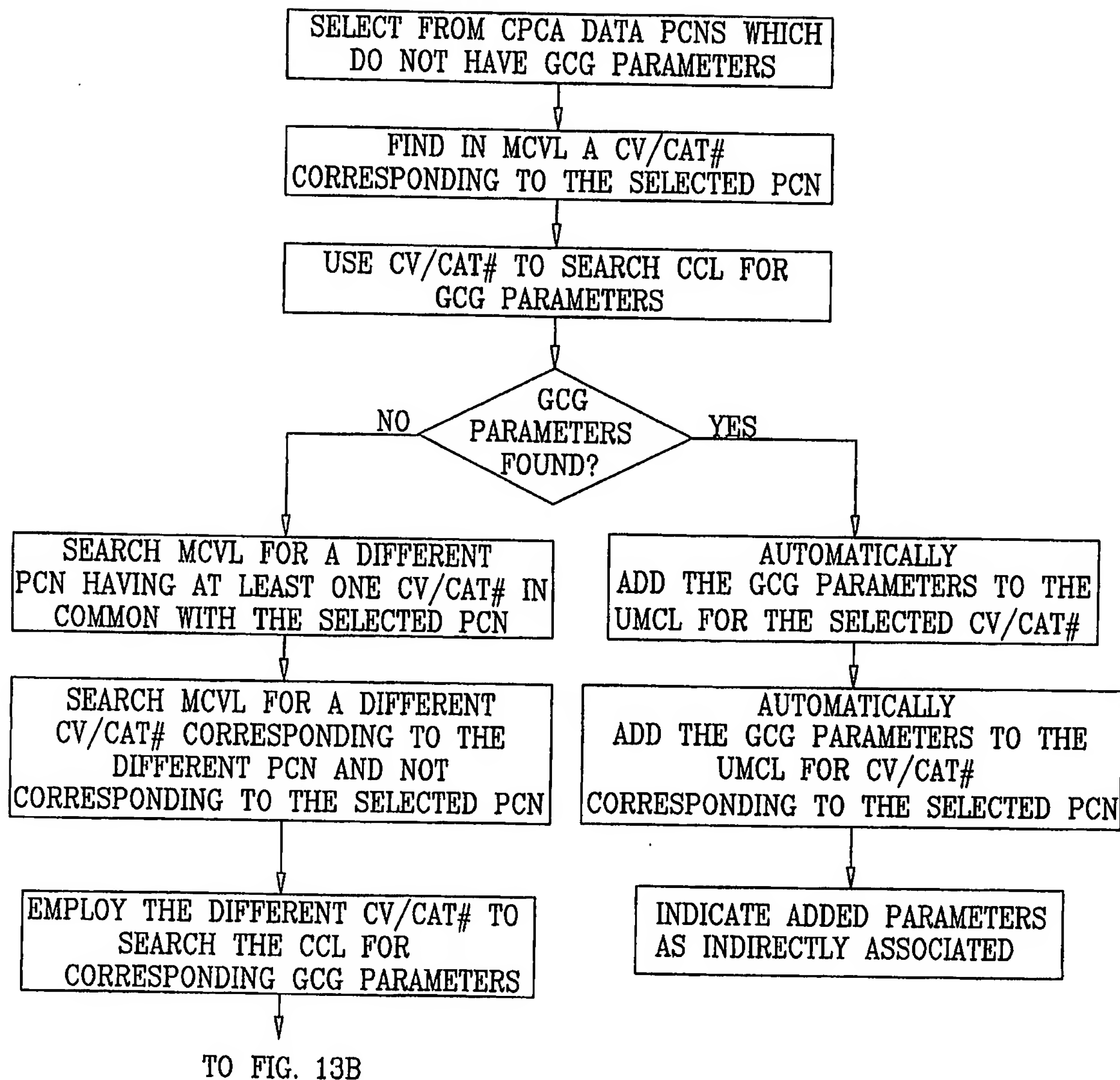


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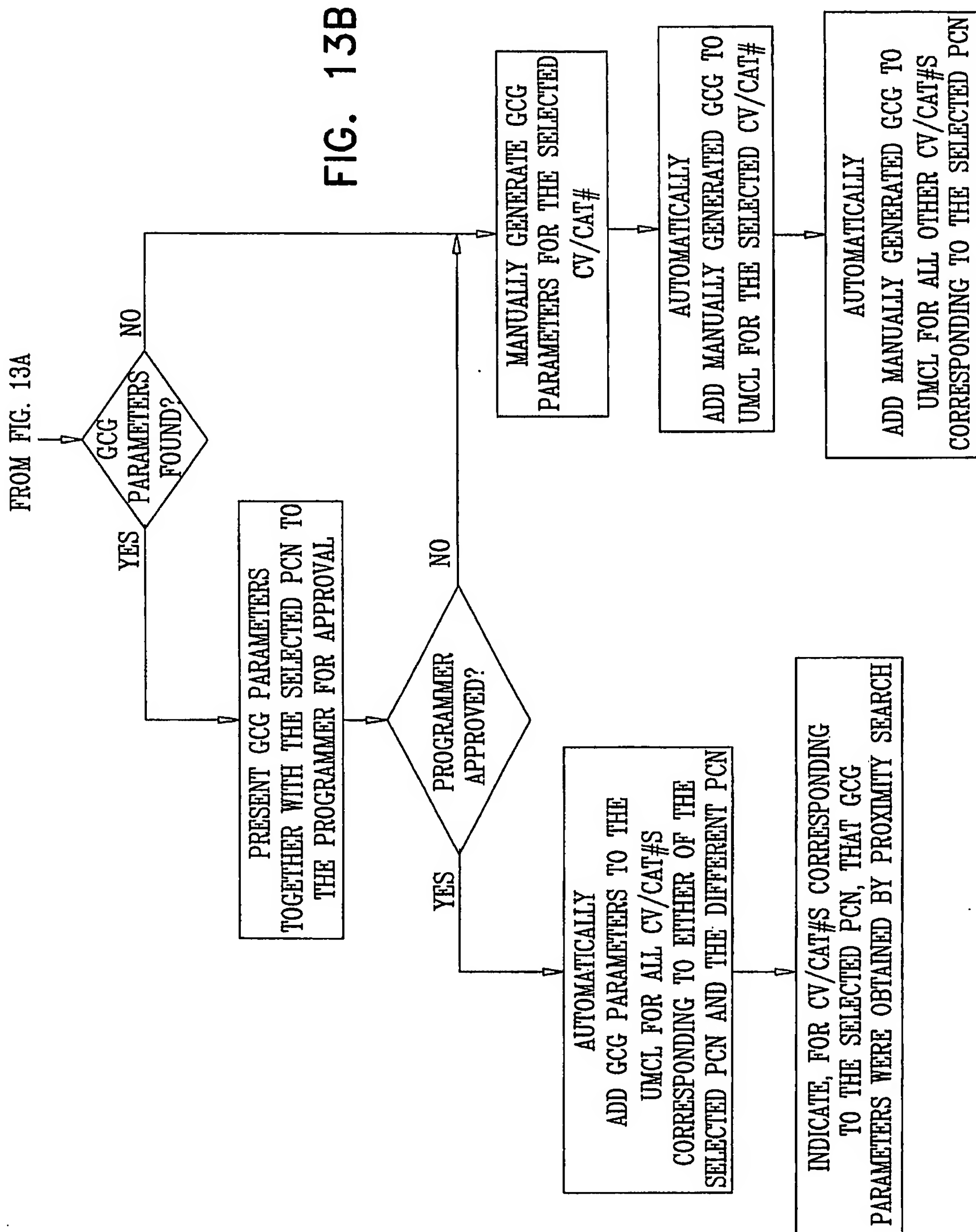


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FIG. 13A



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FIG. 14

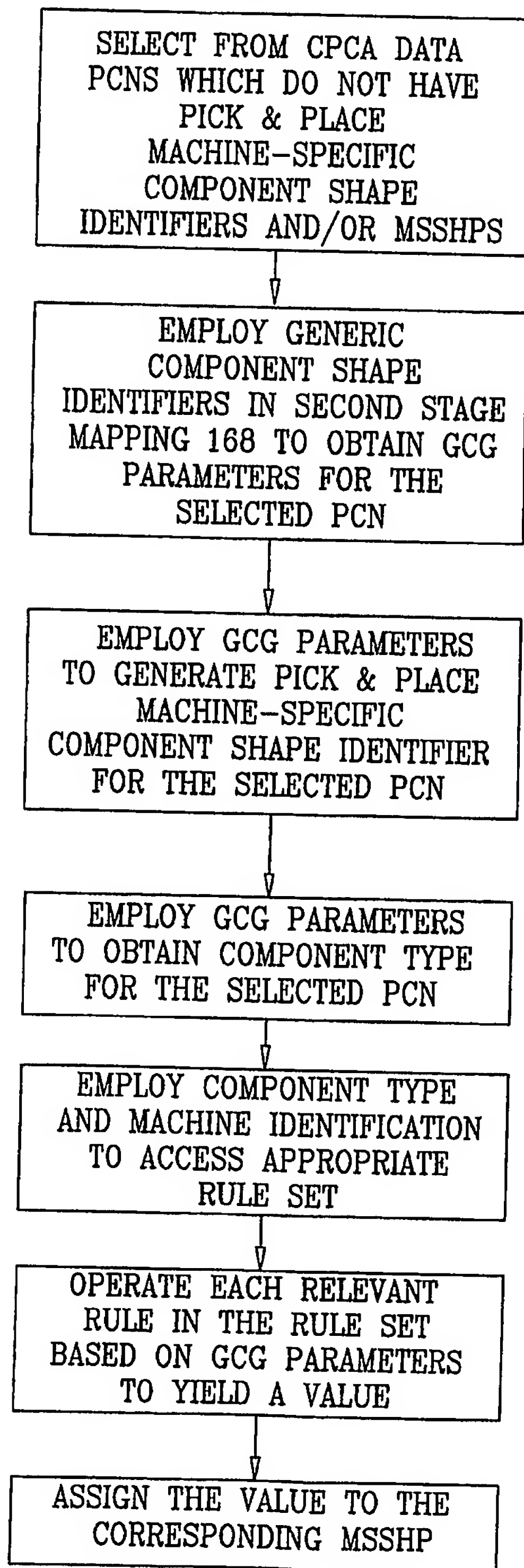
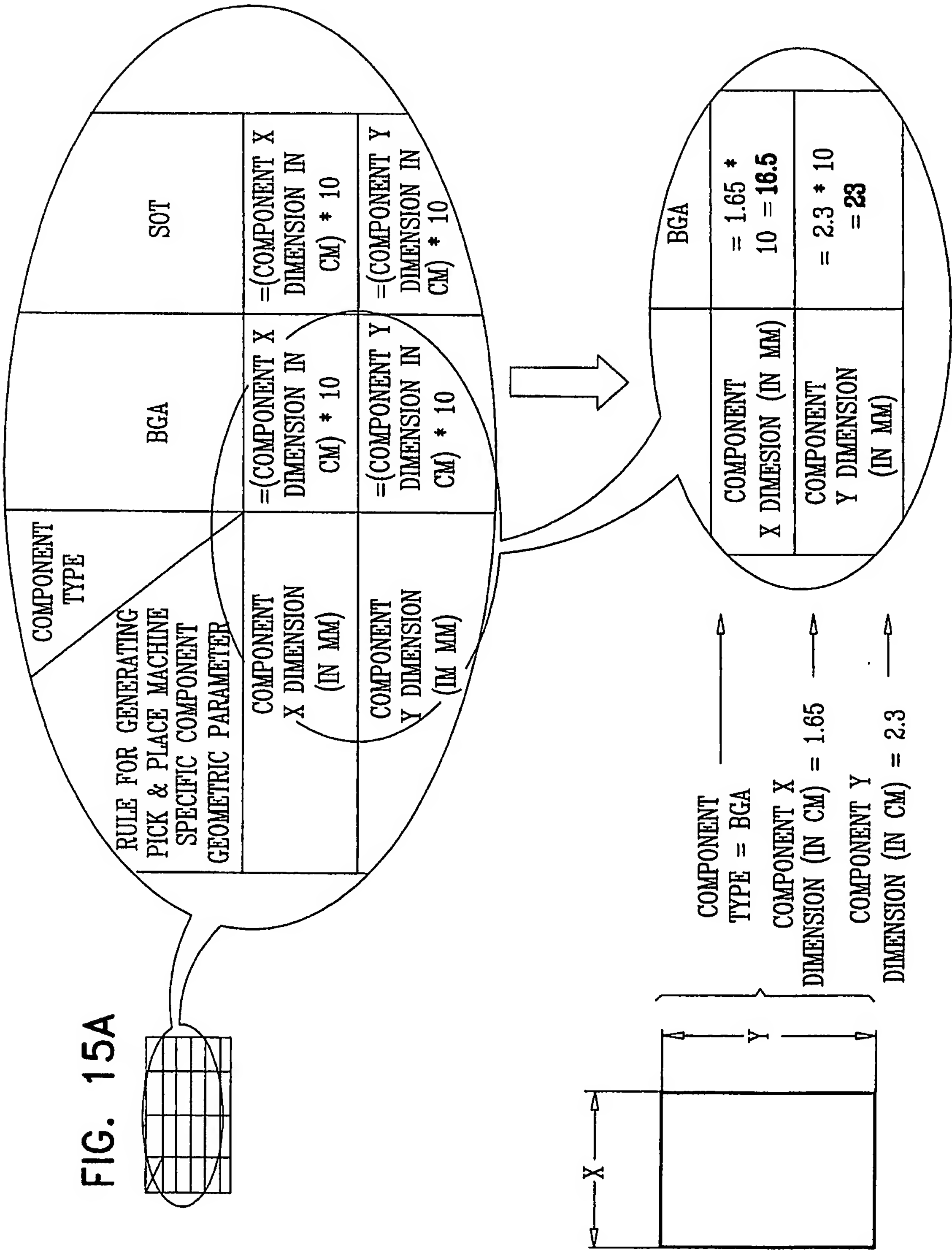
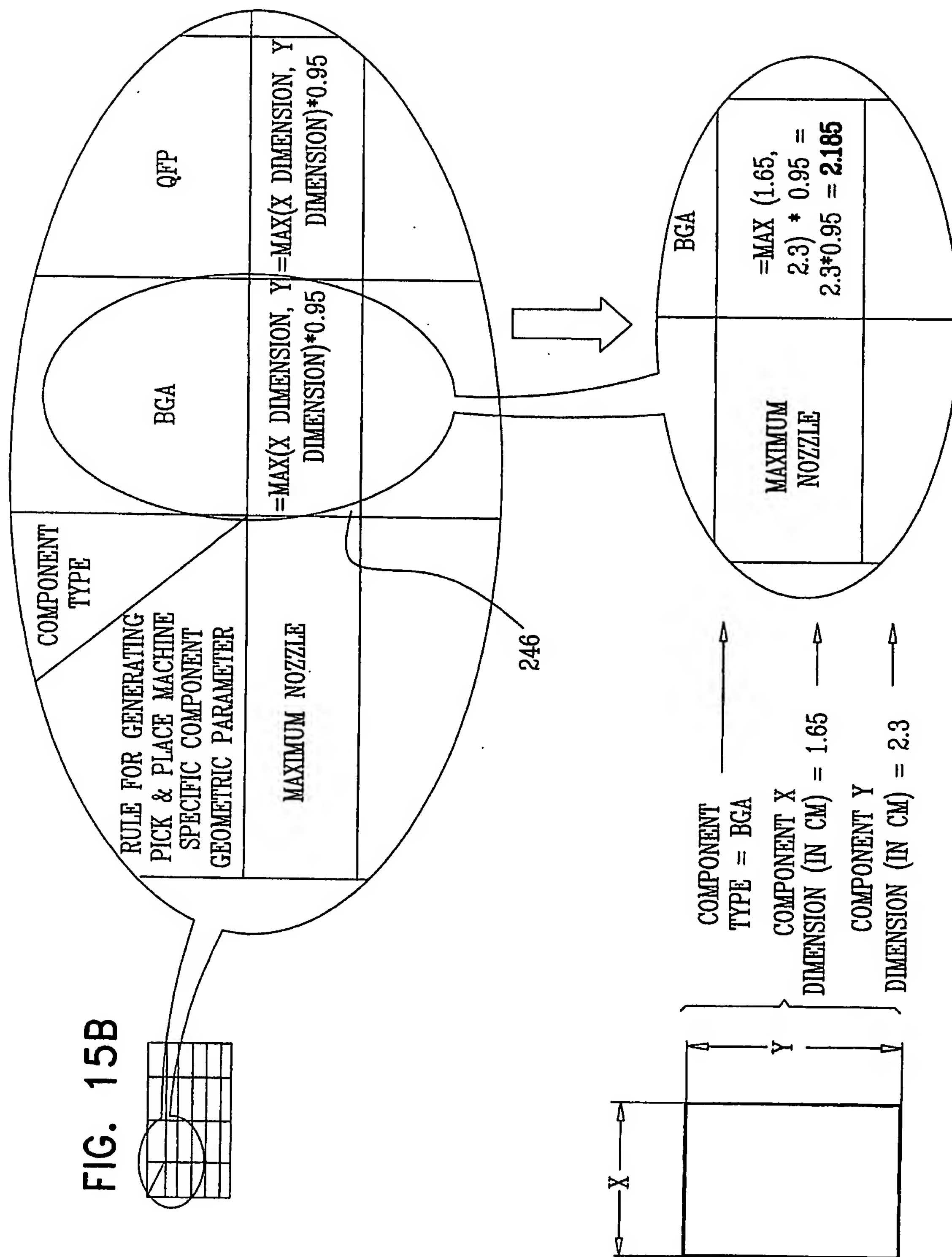


FIG. 15A





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FIG. 15C

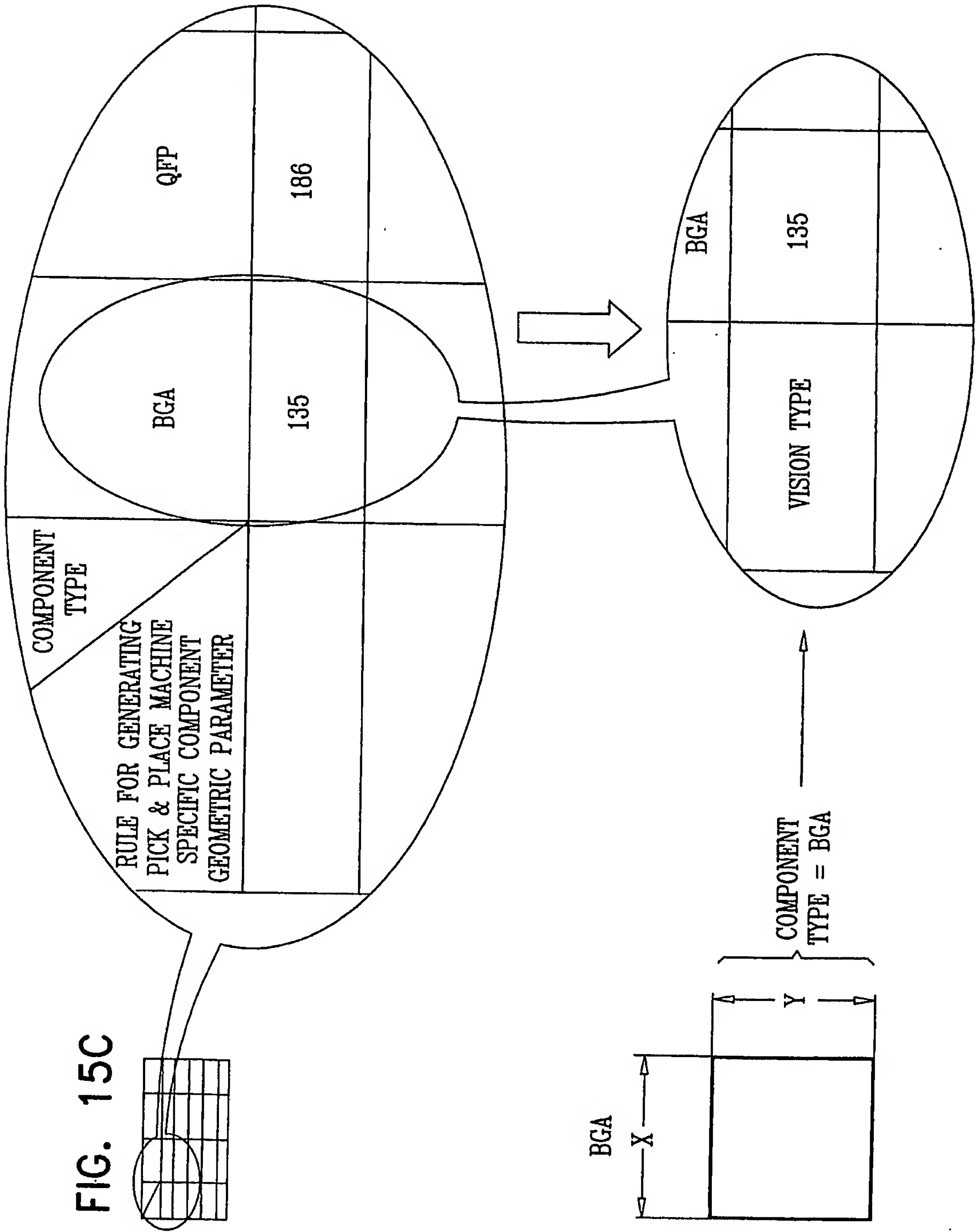


FIG. 15D

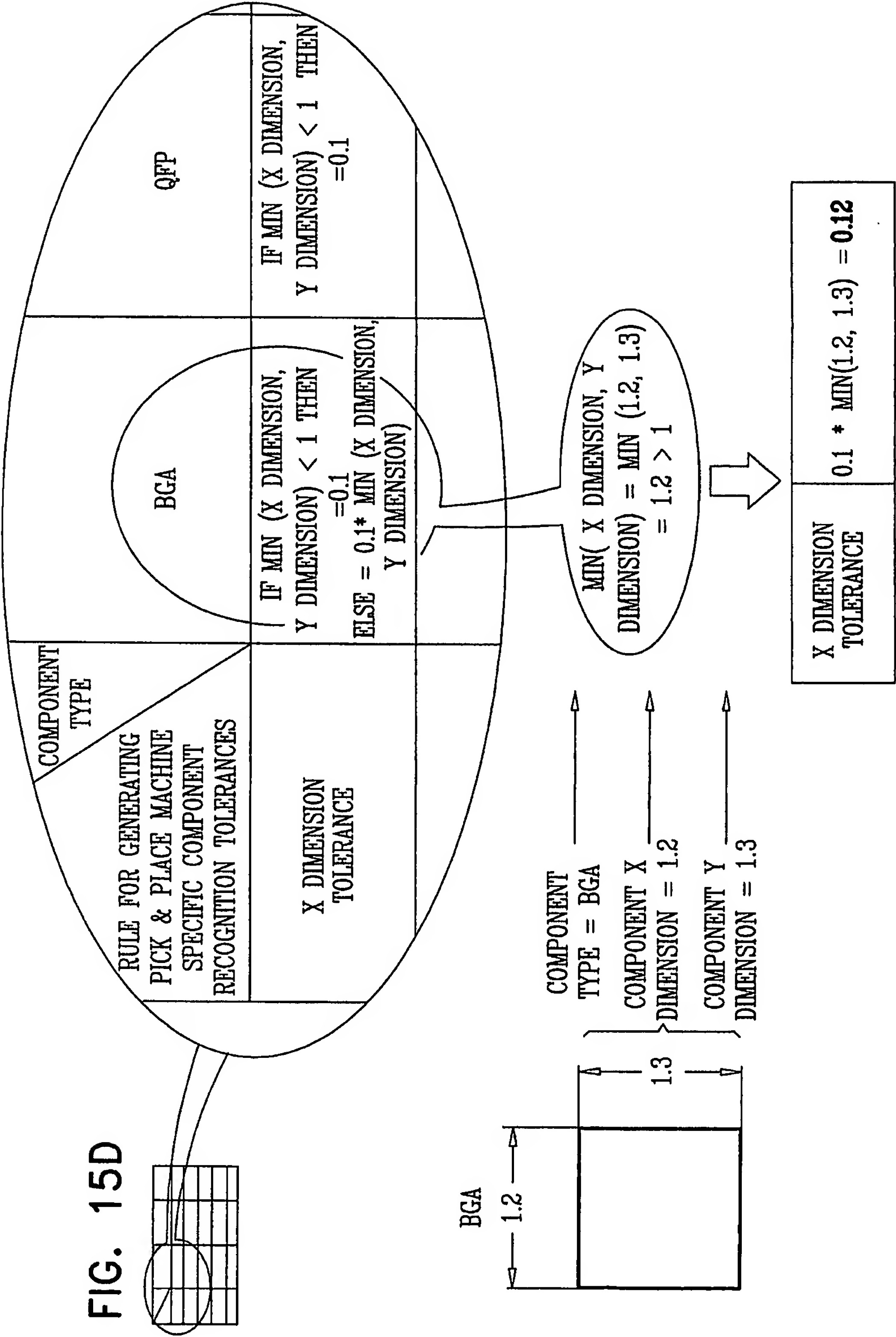
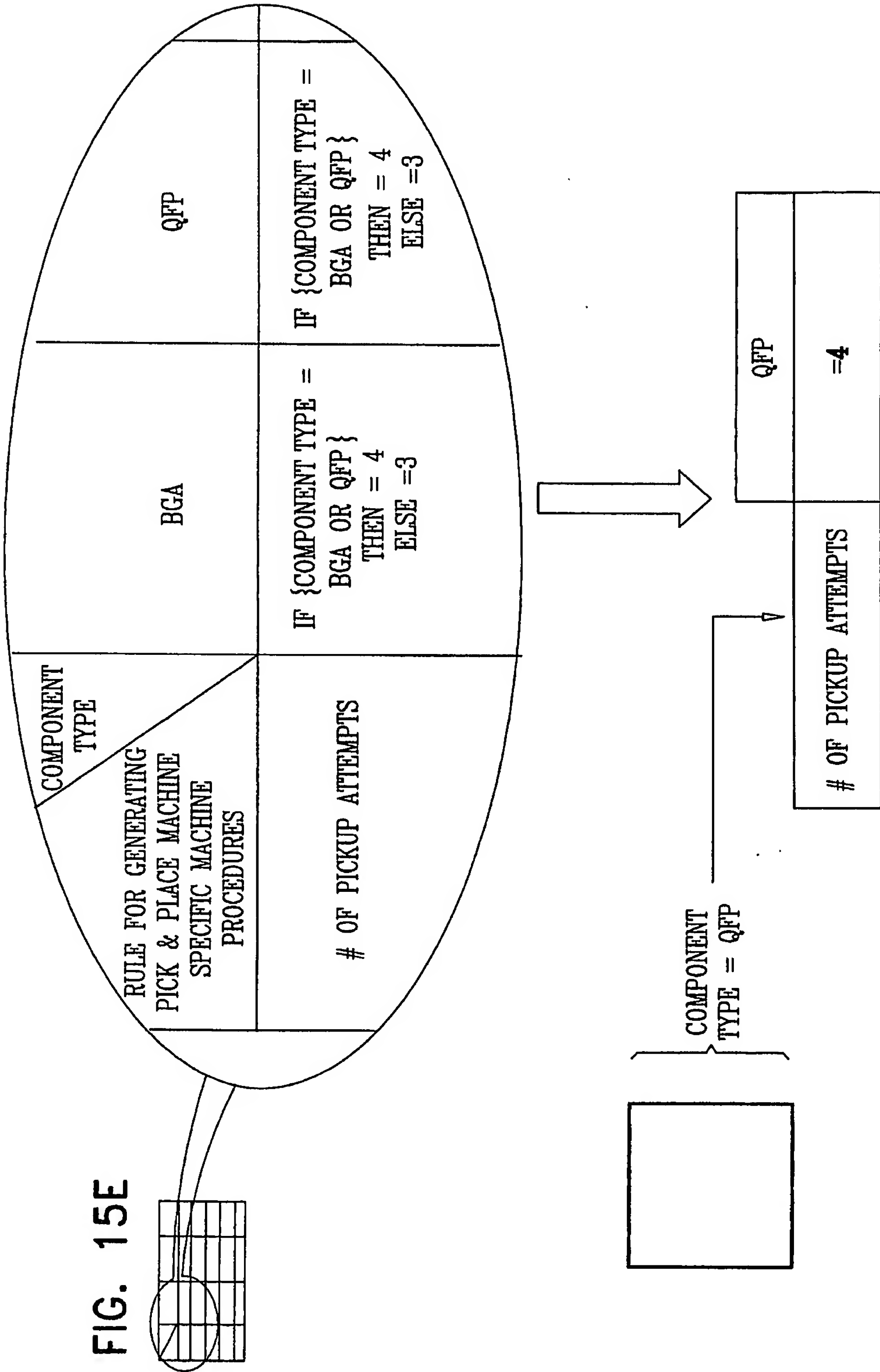
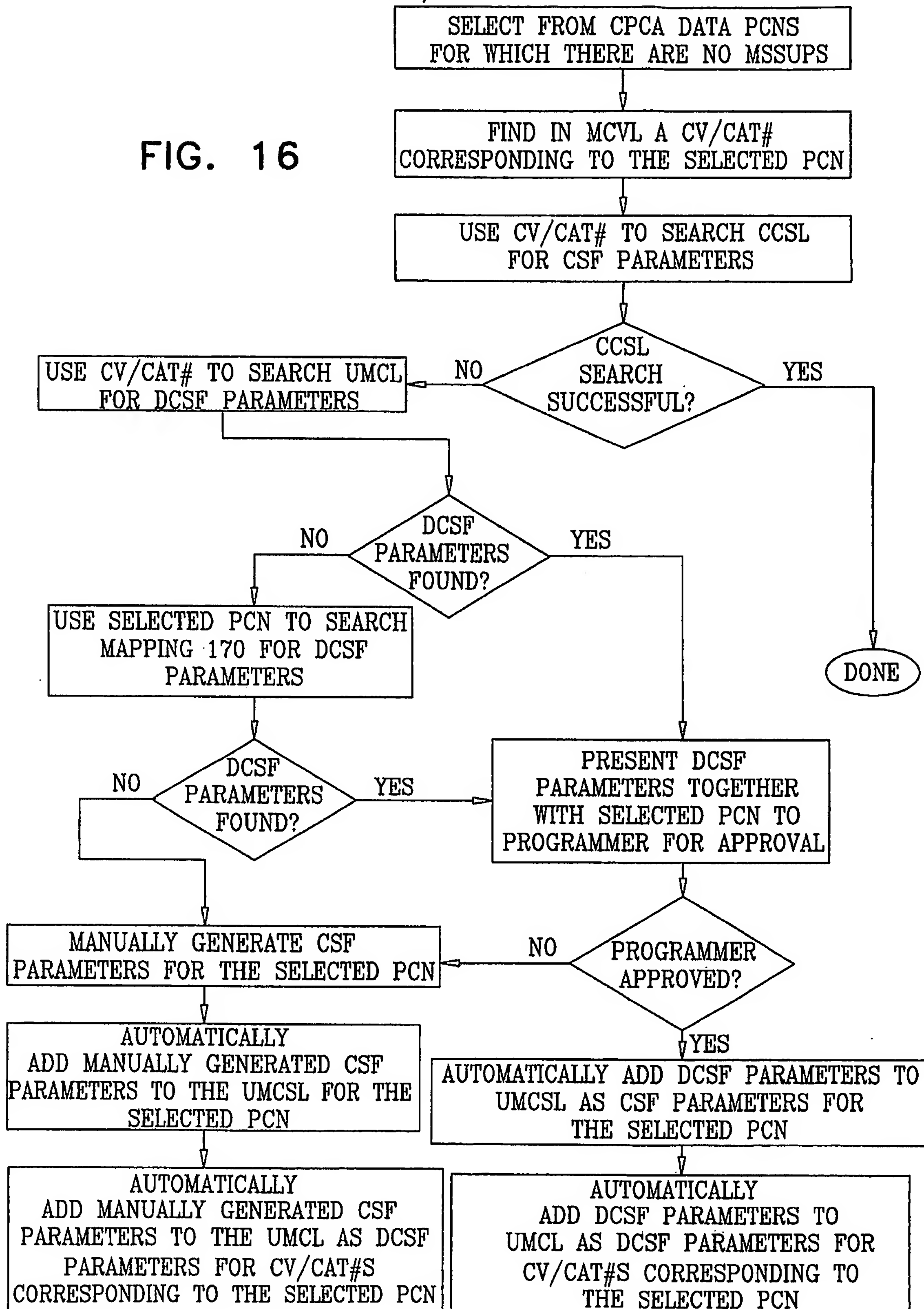


FIG. 15E



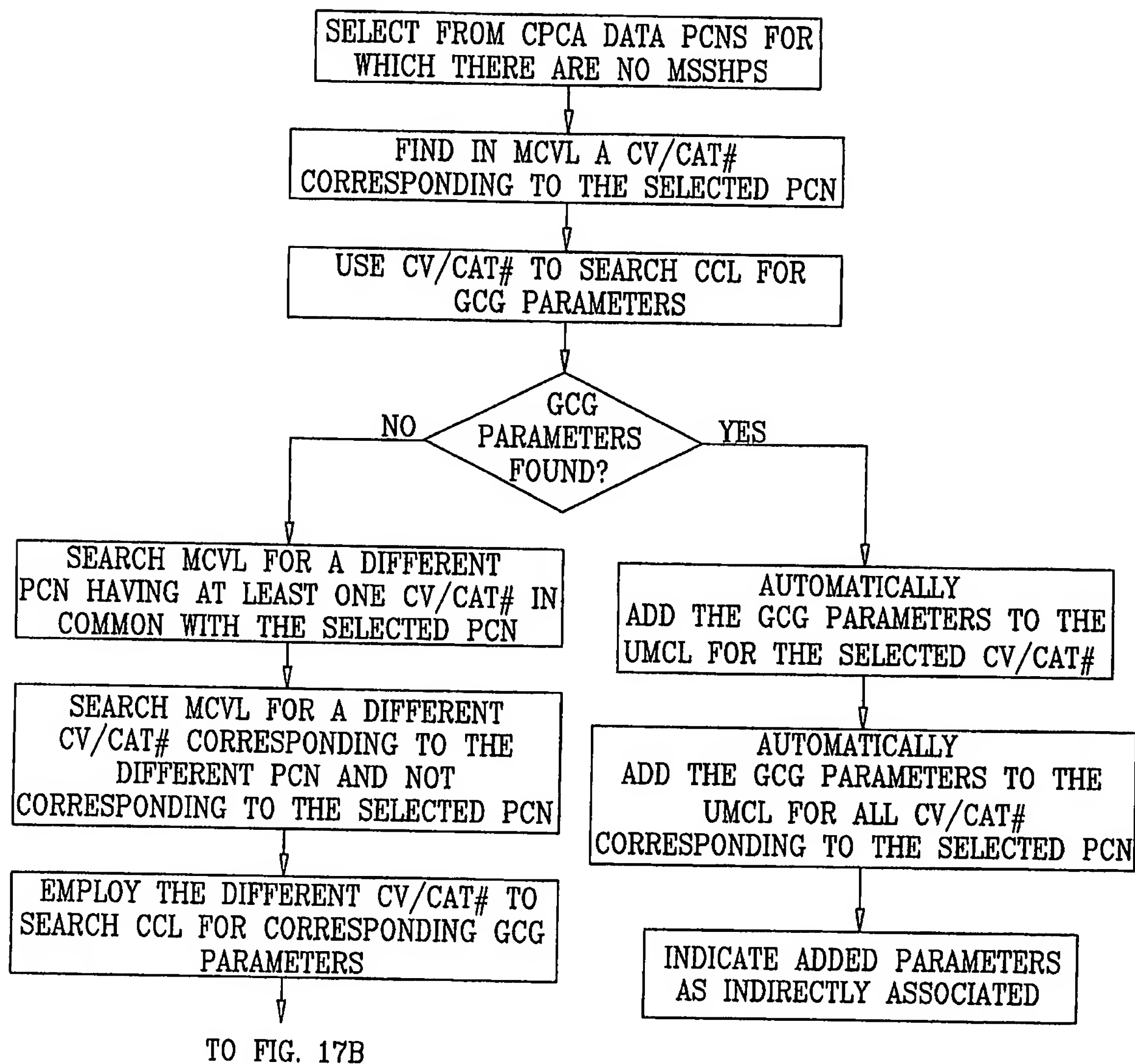
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FIG. 16

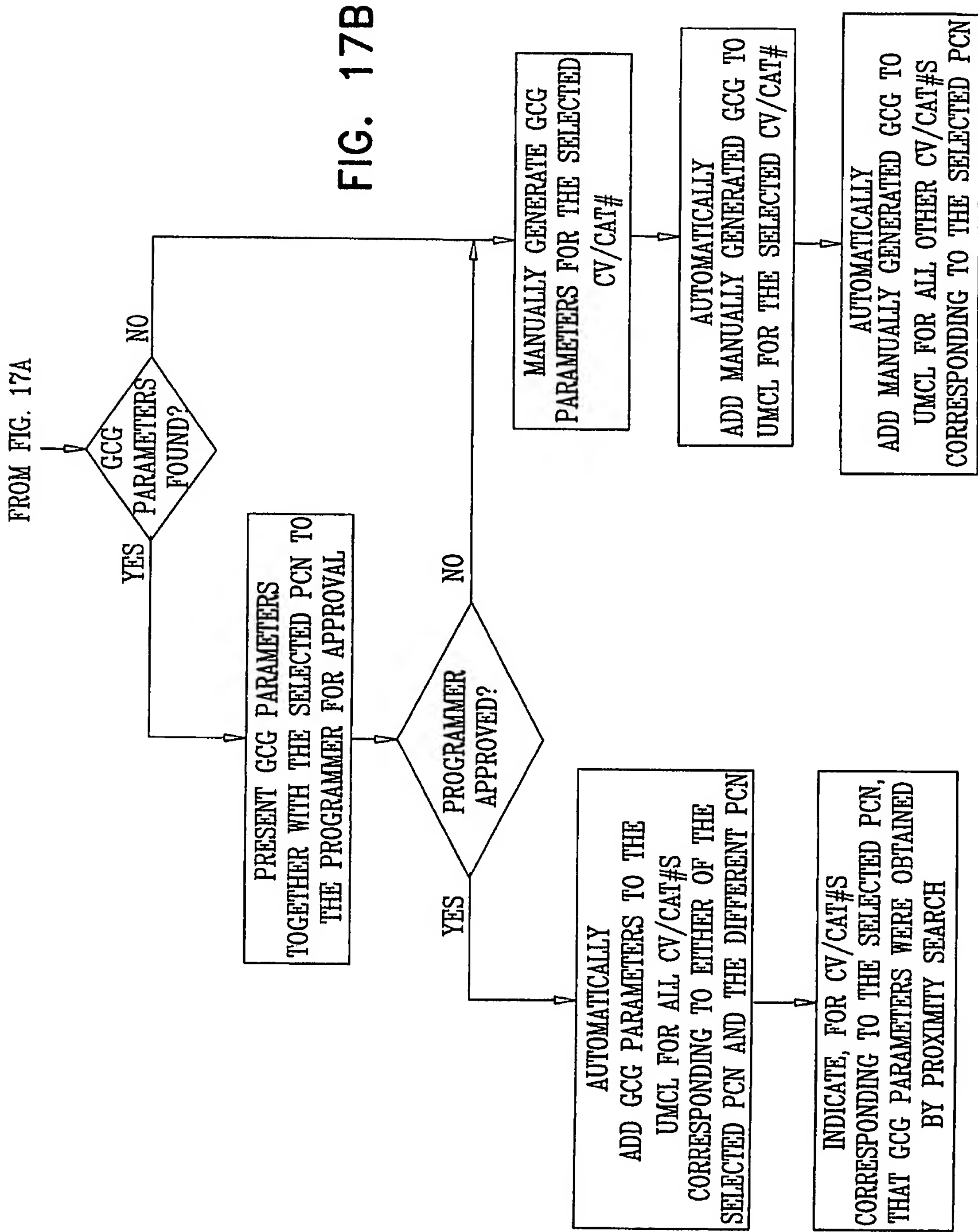


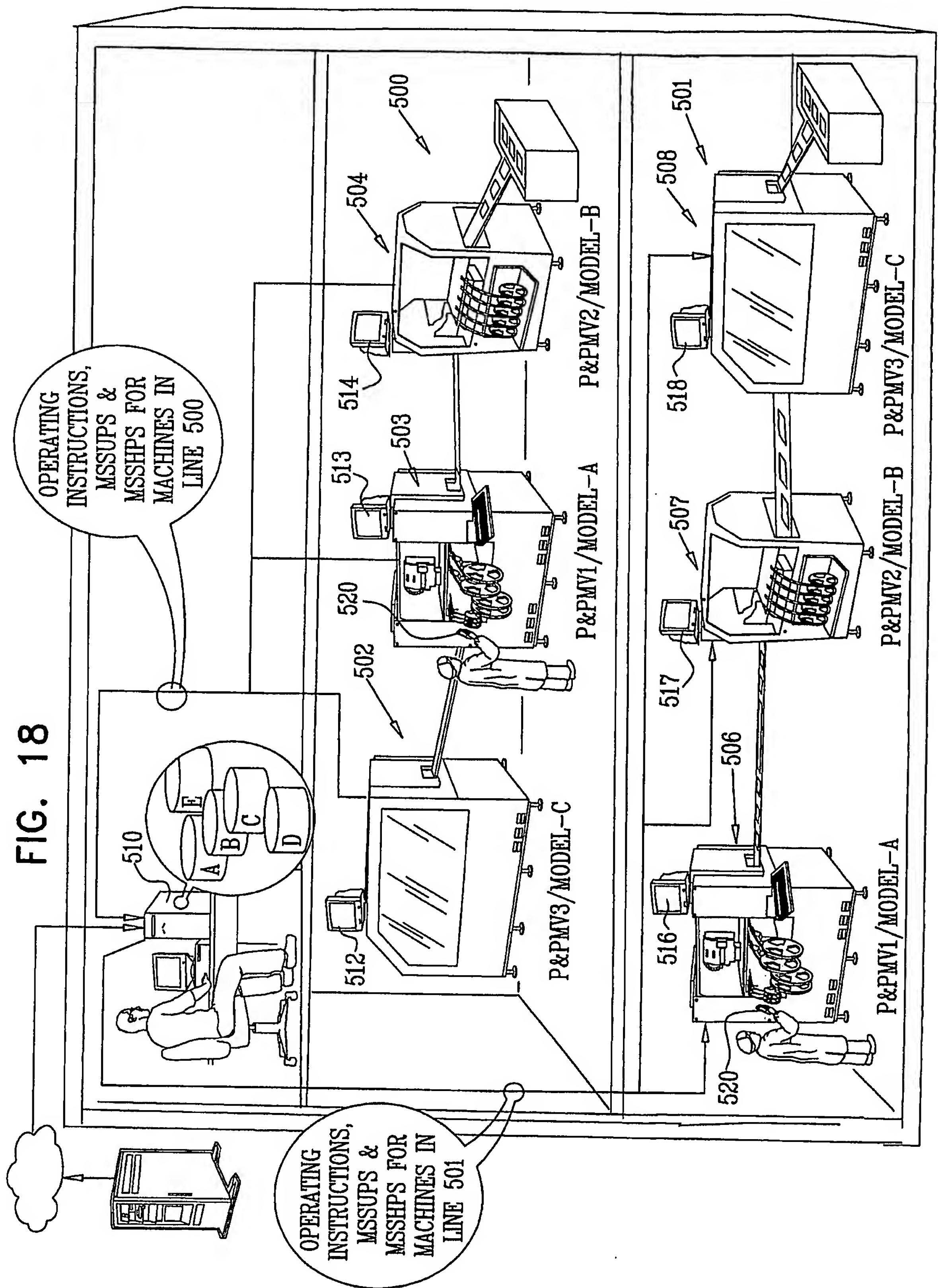
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FIG. 17A



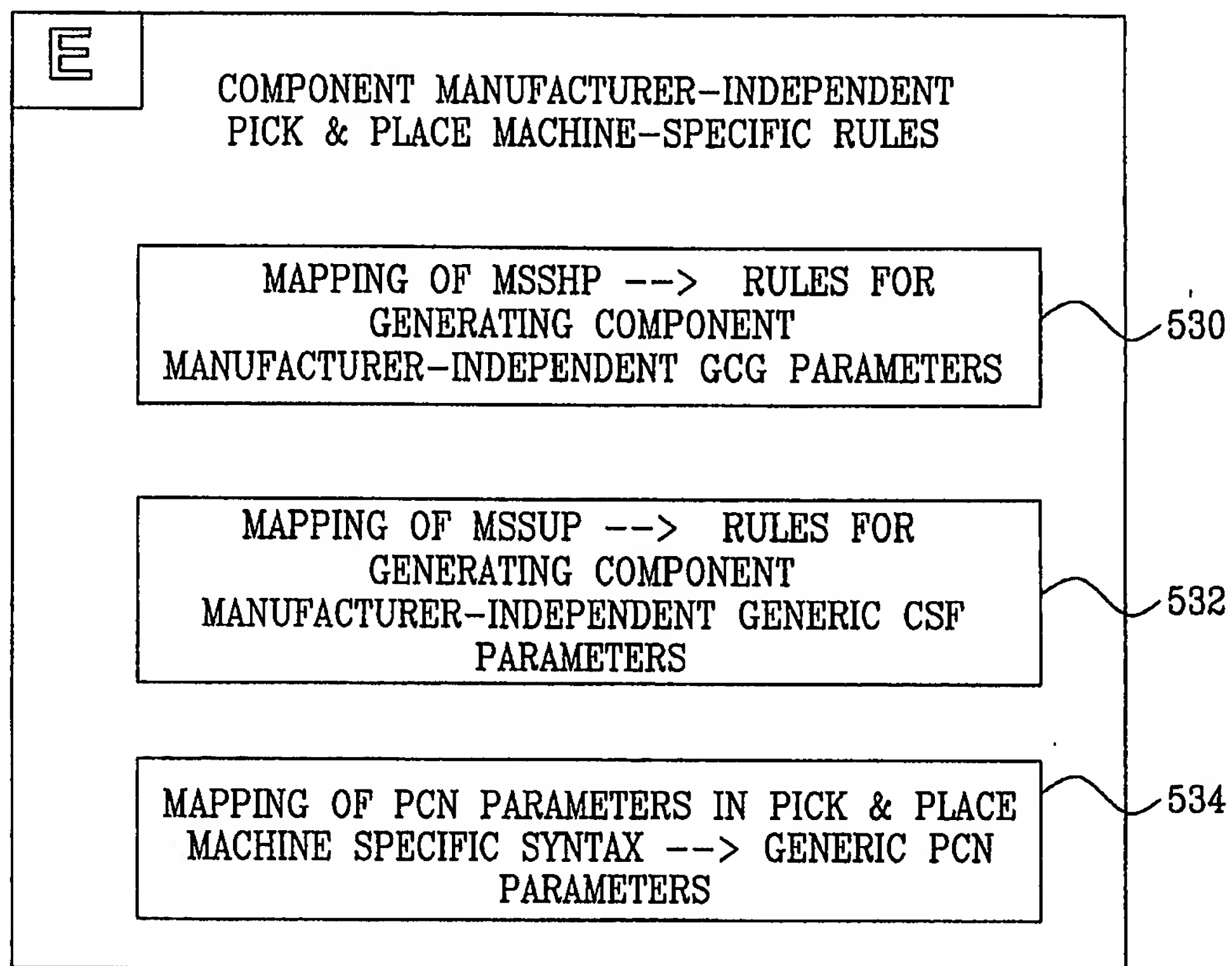
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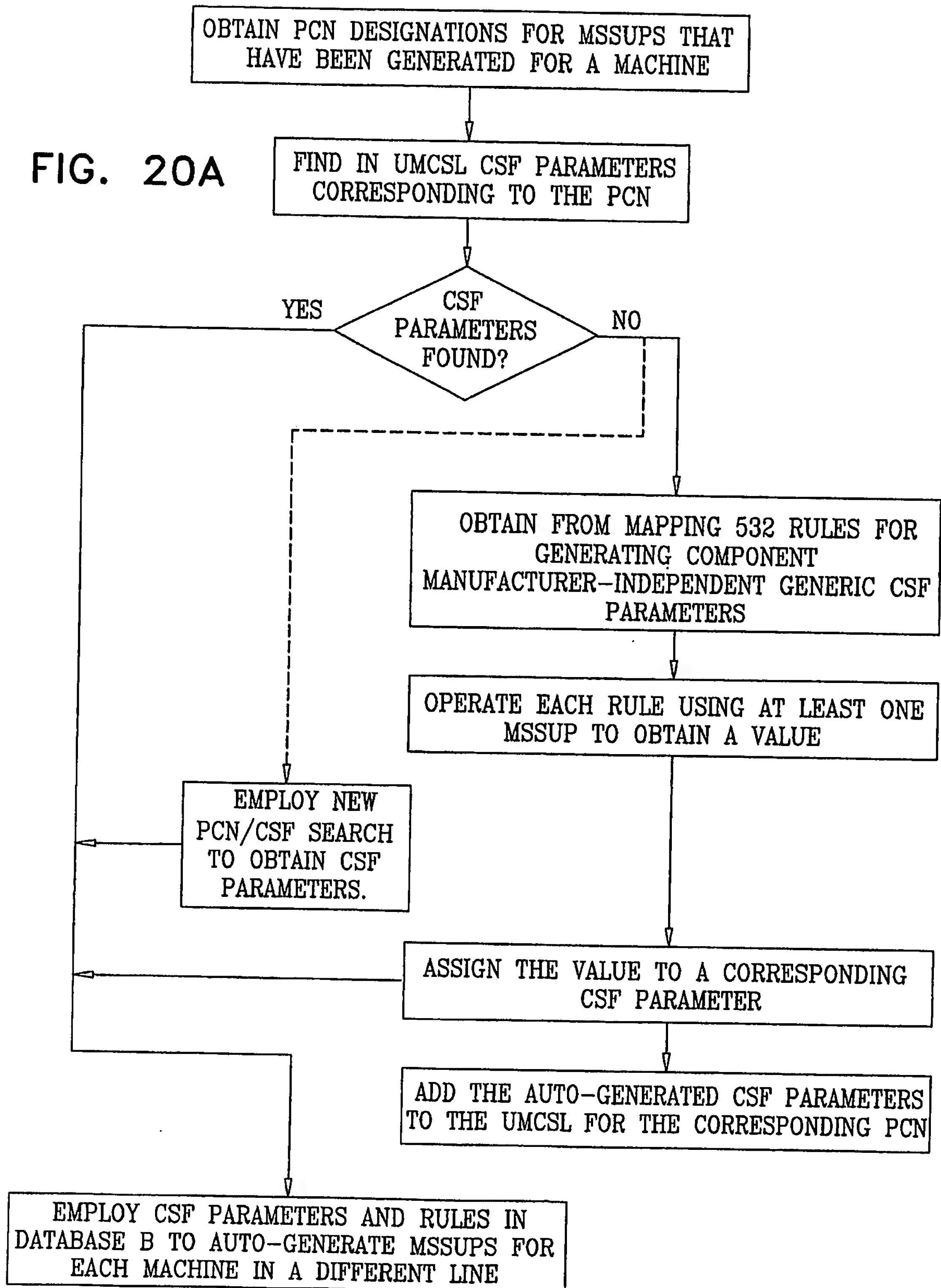
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FIG. 19



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FIG. 20A



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FIG. 20B

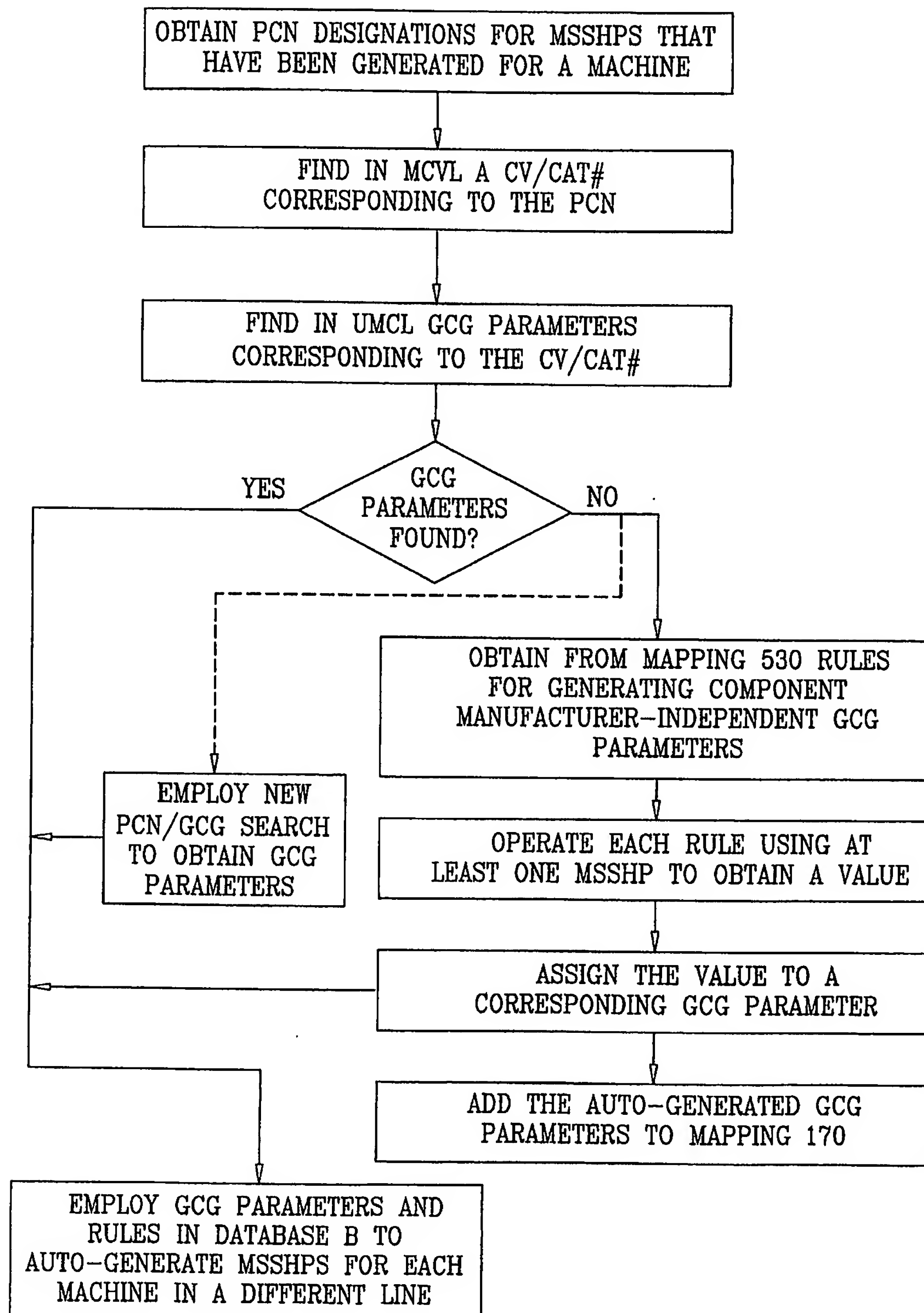
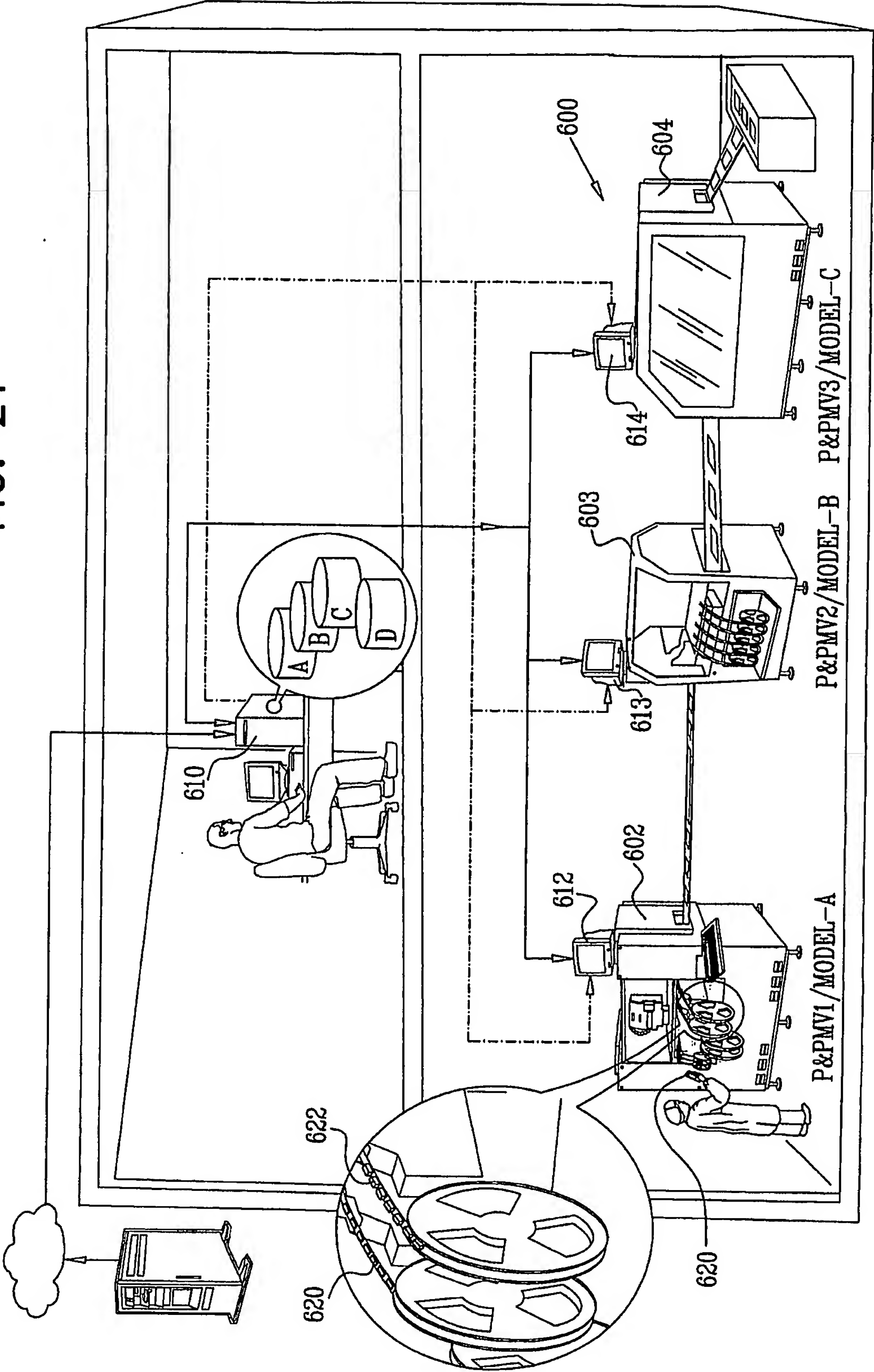
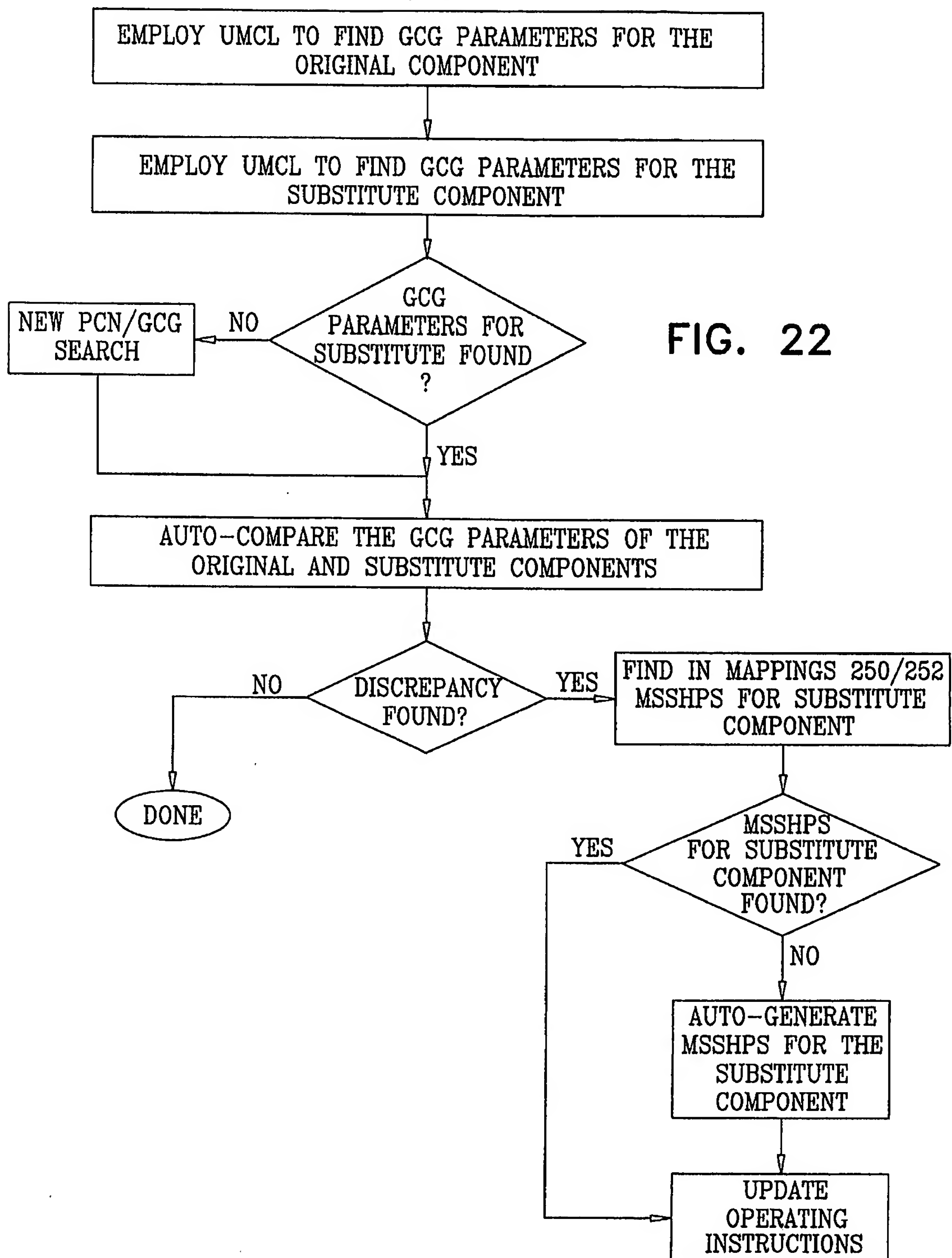


FIG. 21



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FIG. 24

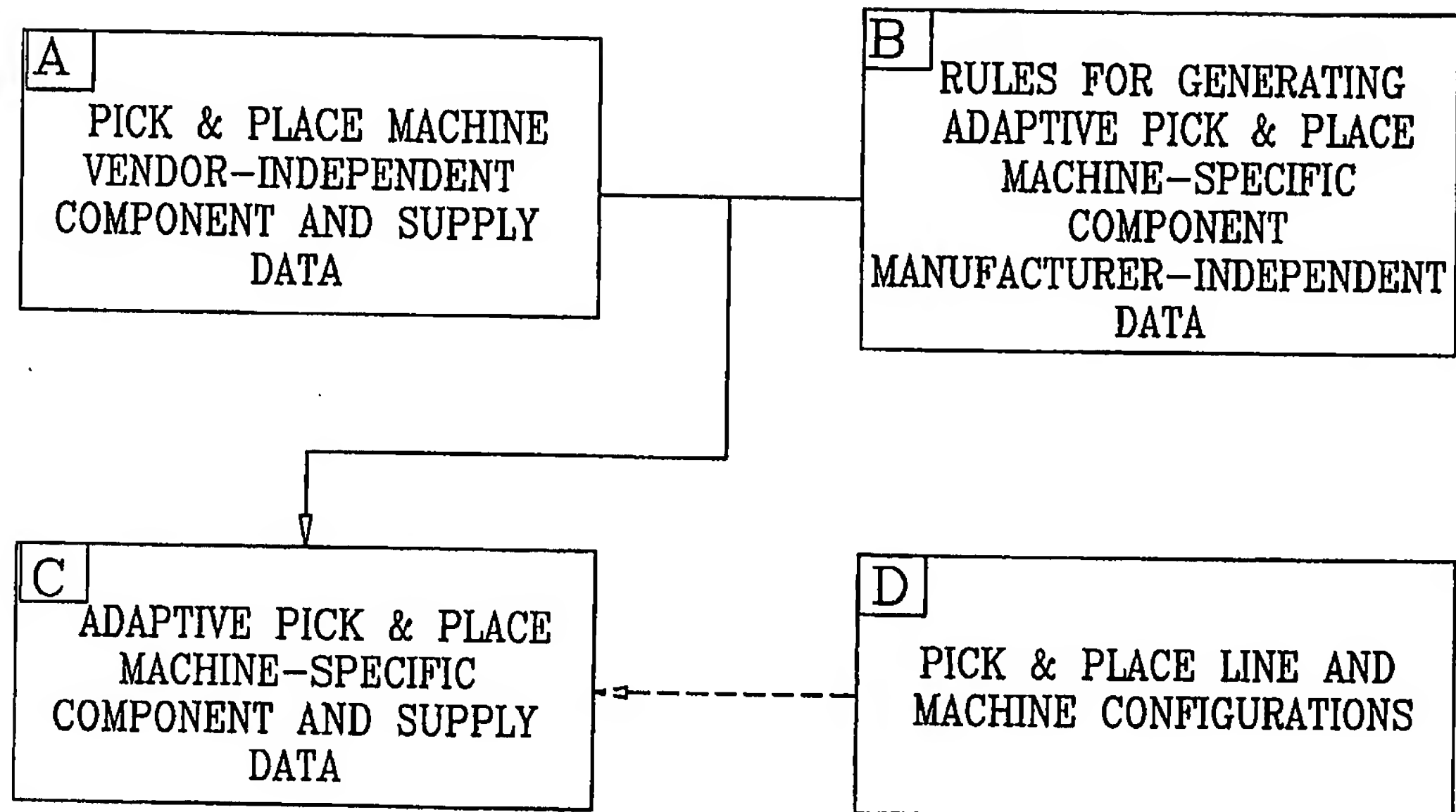


FIG. 25

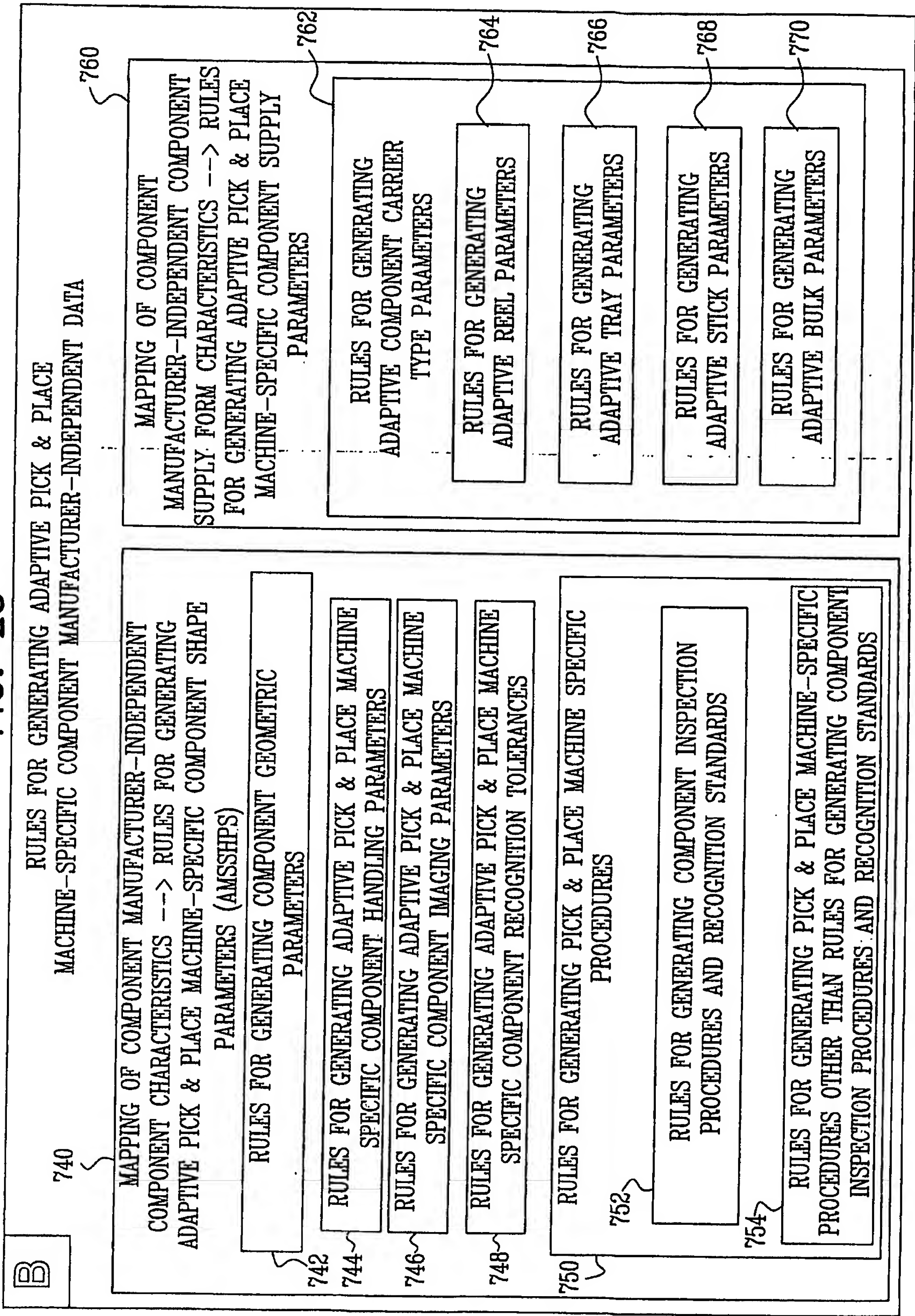


FIG. 26A

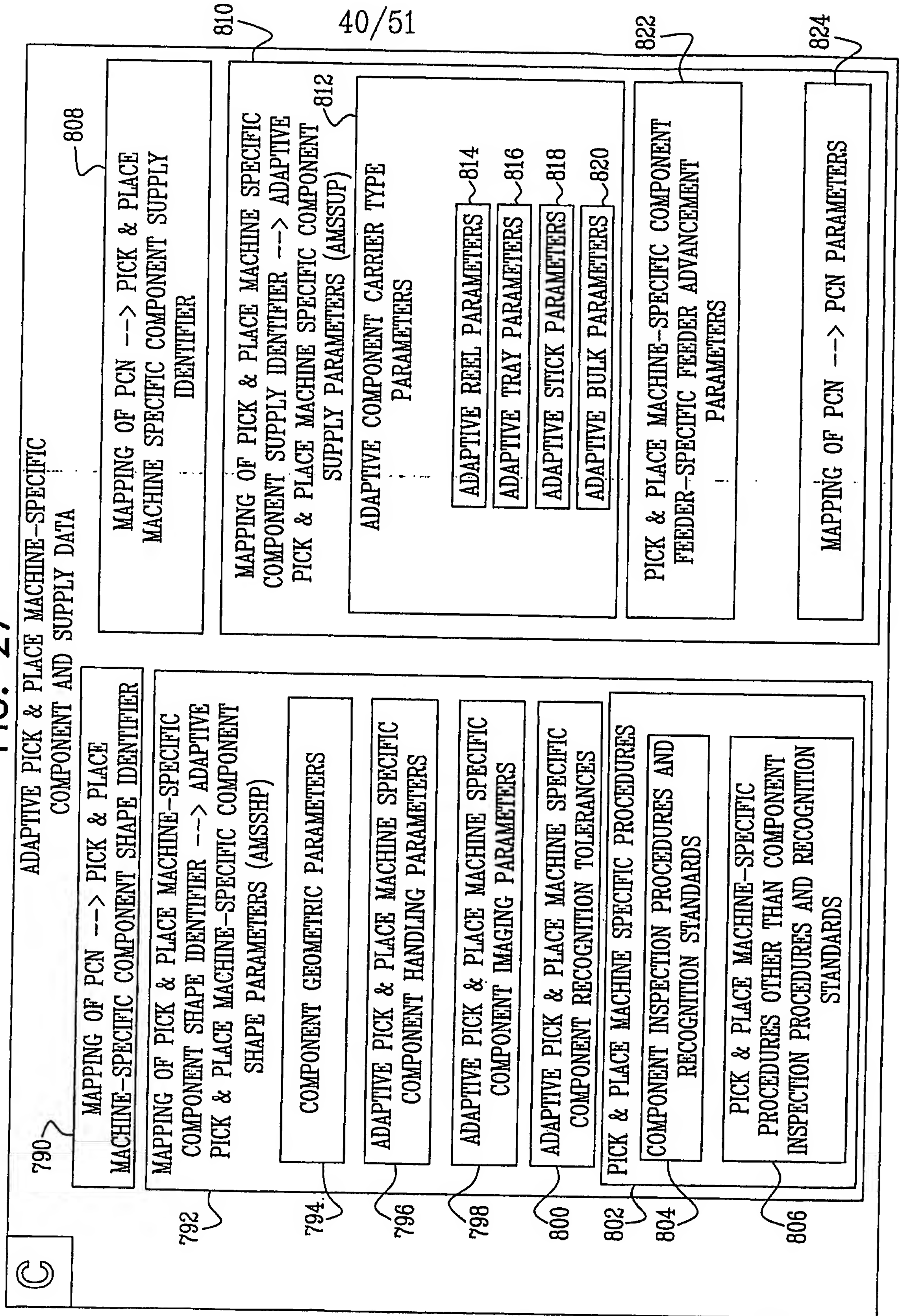
PICK & PLACE MACHINE SPECIFIC COMPONENT TRAY PARAMETER	RULES FOR GENERATING ADAPTIVE PICK & PLACE MACHINE SPECIFIC COMPONENT TRAY PARAMETER
FEEDER NAME	TRAY LIFTER: IF { FRONT TRAY LIFTER} THEN =NAME A ELSE THEN--=NAME B
• • •	• • •

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FIG. 26B

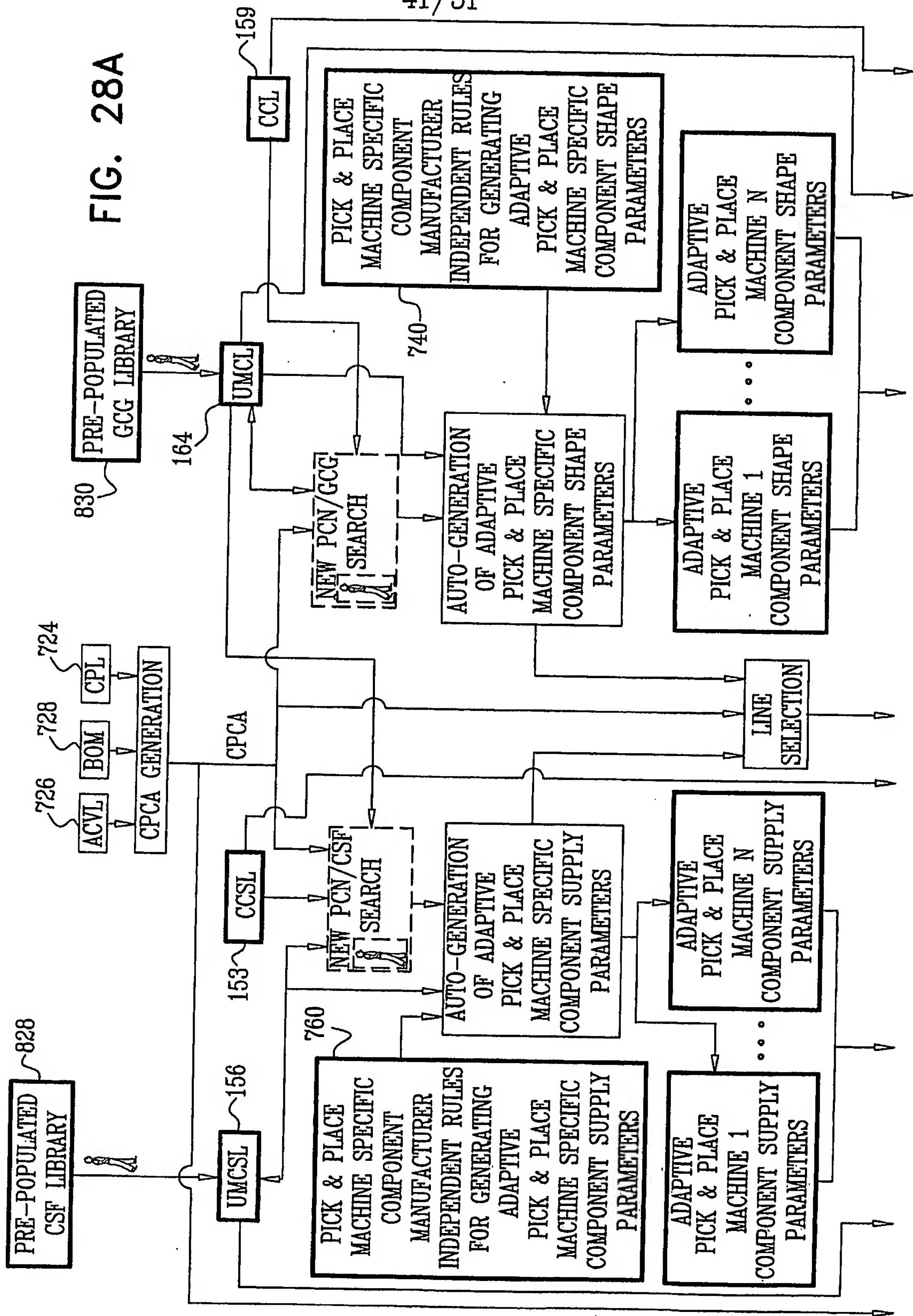
ADAPTIVE PICK & PLACE MACHINE SPECIFIC COMPONENT SHAPE PARAMETER	COMPONENT MANUFACTURER-INDEPENDENT COMPONENT CHARACTERISTIC (COMPONENT TYPE)	BGA	QFP	CONNECTOR
VISION ALGORITHM		782 FOR BACKLIGHTING: IF {#LEADS > 100}{THEN NOT RELEVANT ELSE =105 FOR FRONTLIGHTING: =103	784 FOR BACKLIGHTING: NOT RELEVANT FOR FRONTLIGHTING: =107	786 IF {LEAD-PITCH < 0.01} THEN USE FRONTLIGHTING =120 ELSE USE FRONTLIGHTING =130 OR BACKLIGHTING =150
• • •		• • •	• • •	• • •

FIG. 27



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FIG. 28A



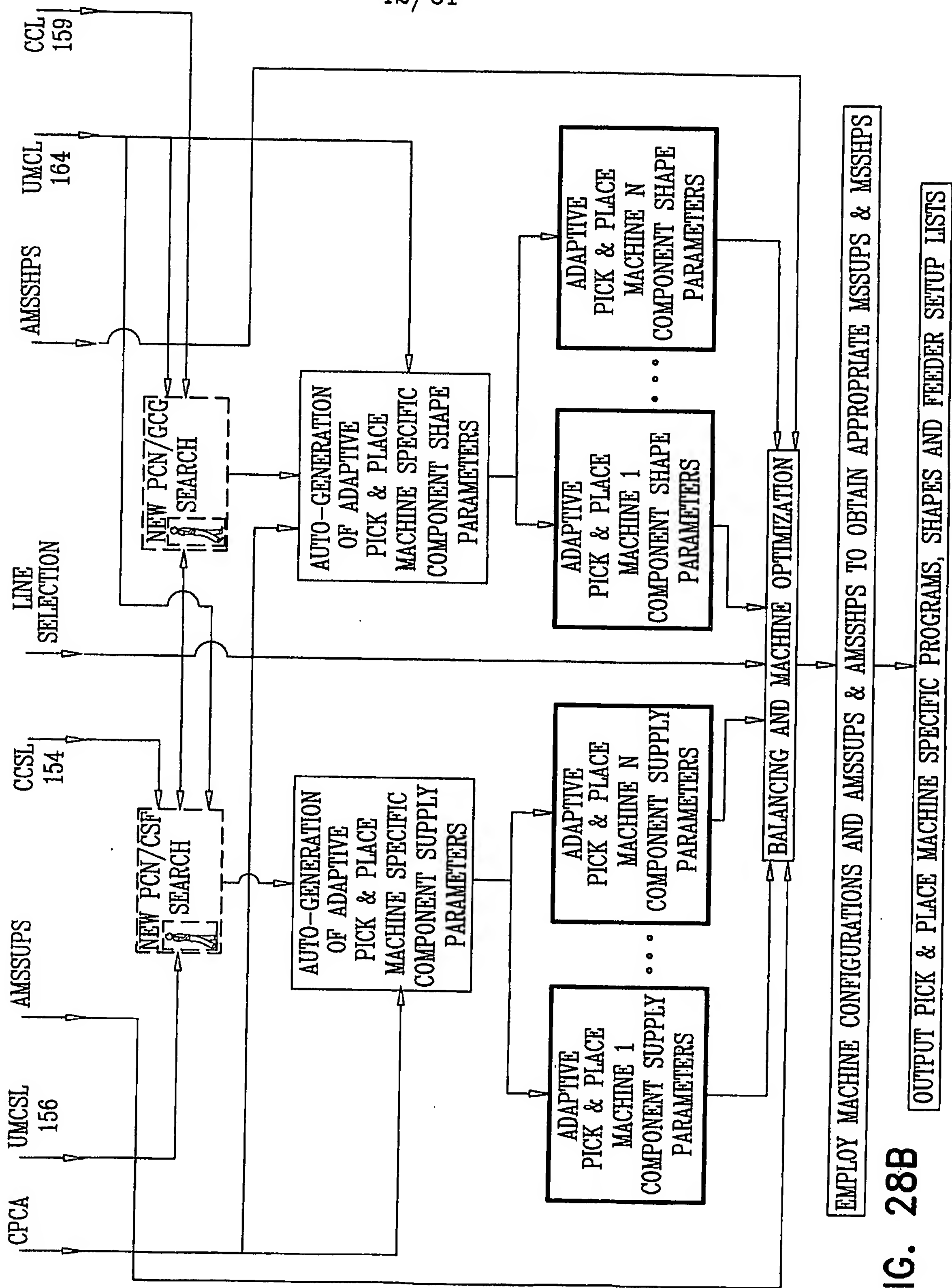
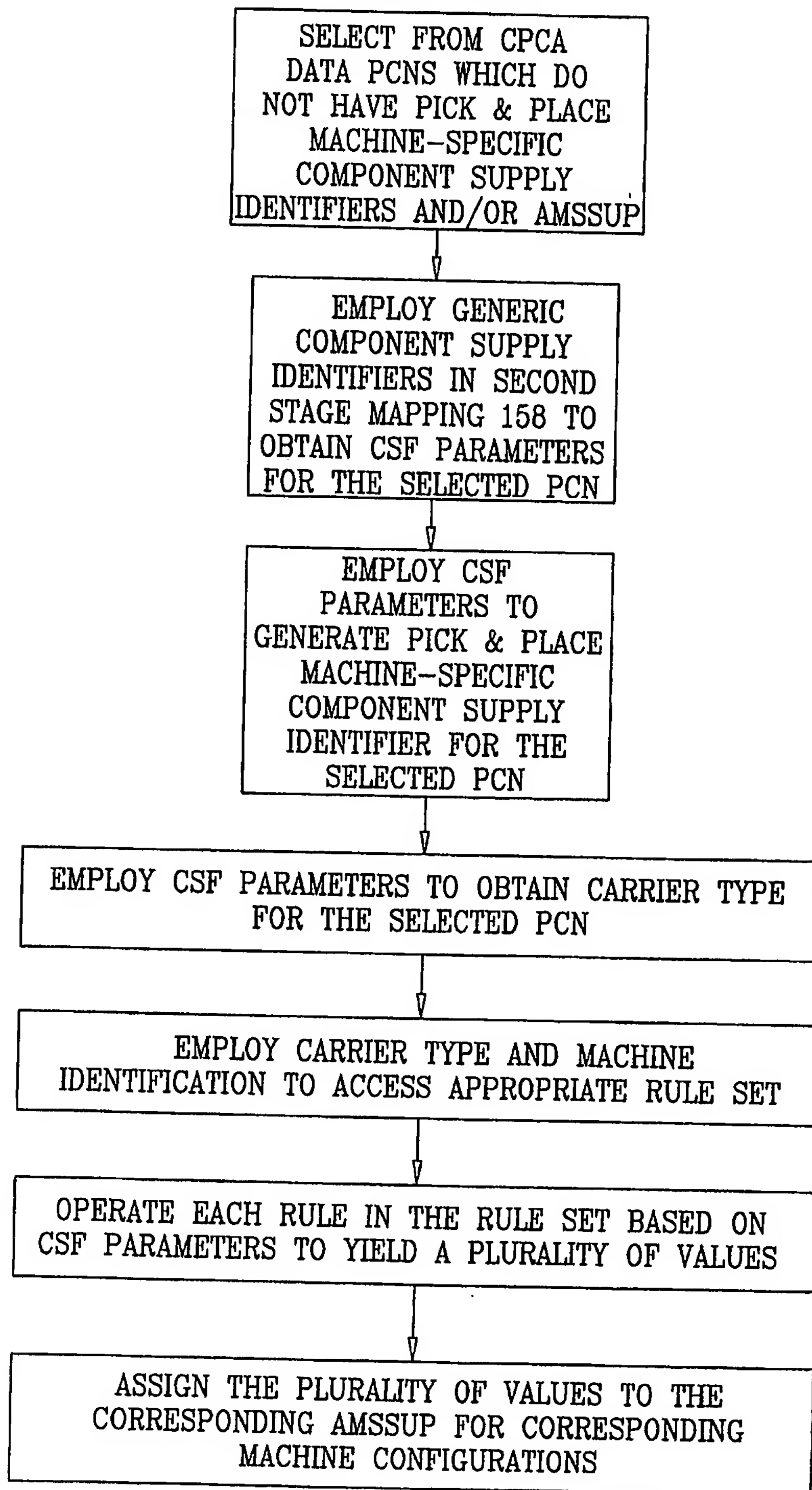
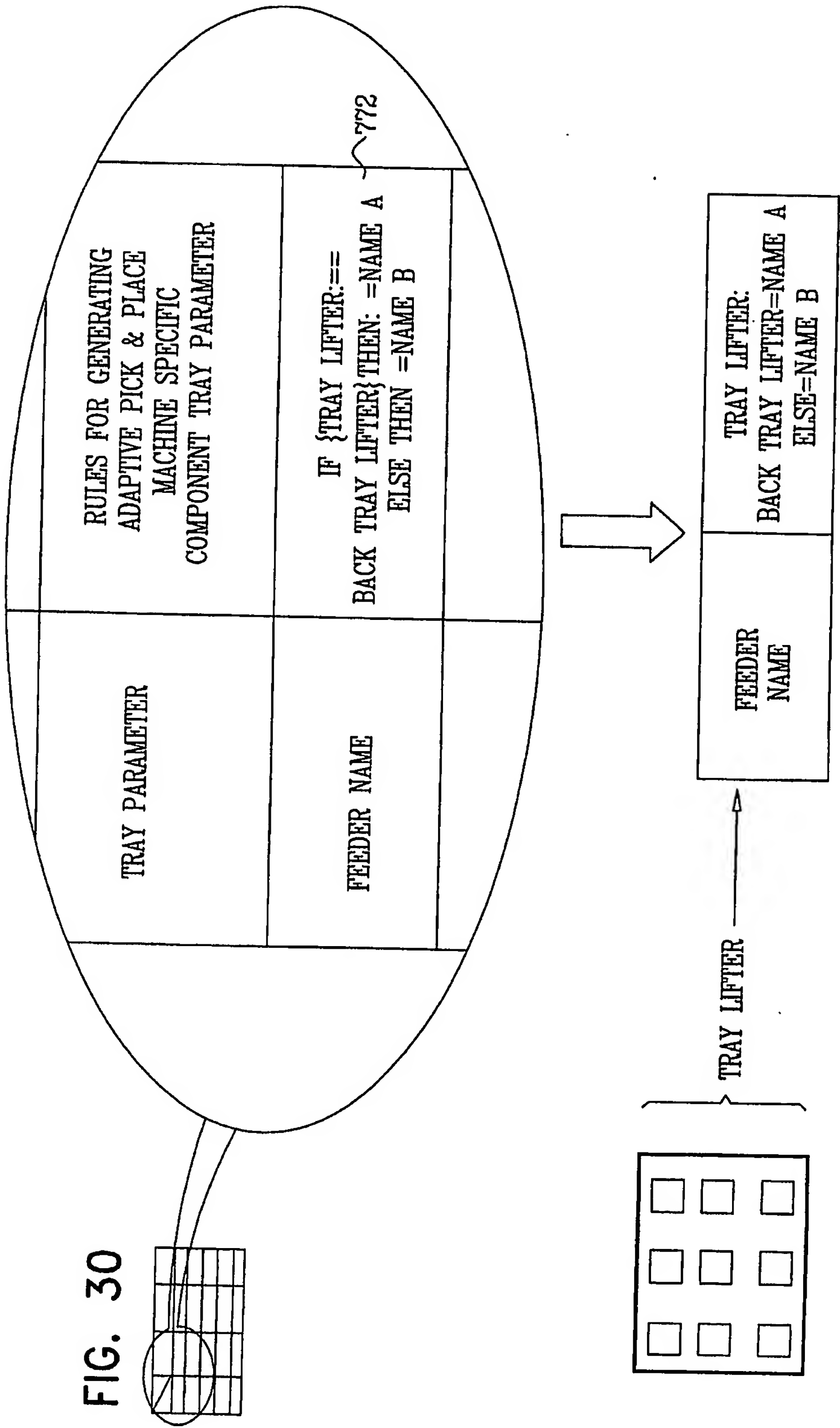


FIG. 28B

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FIG. 29





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FIG. 31

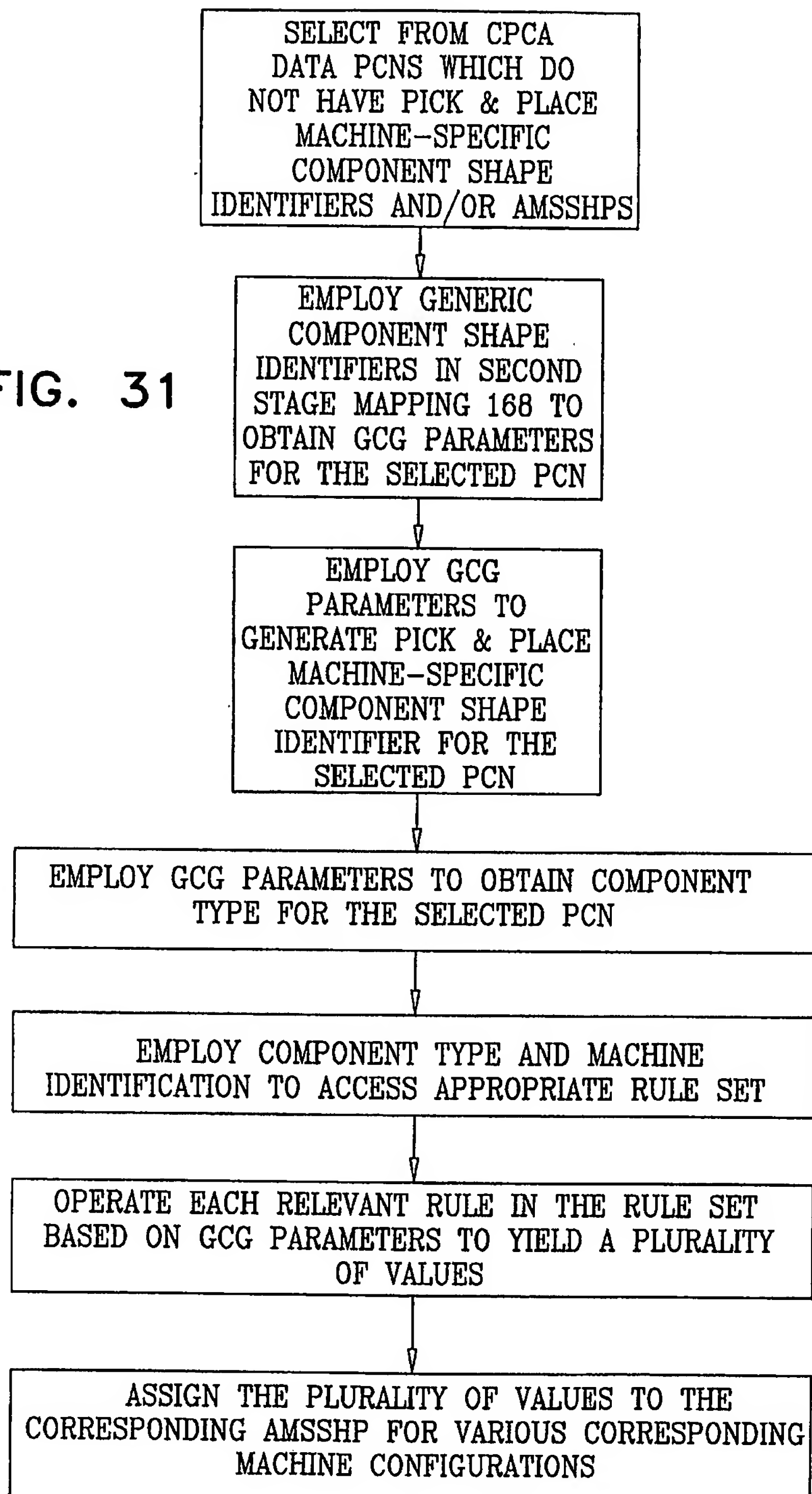
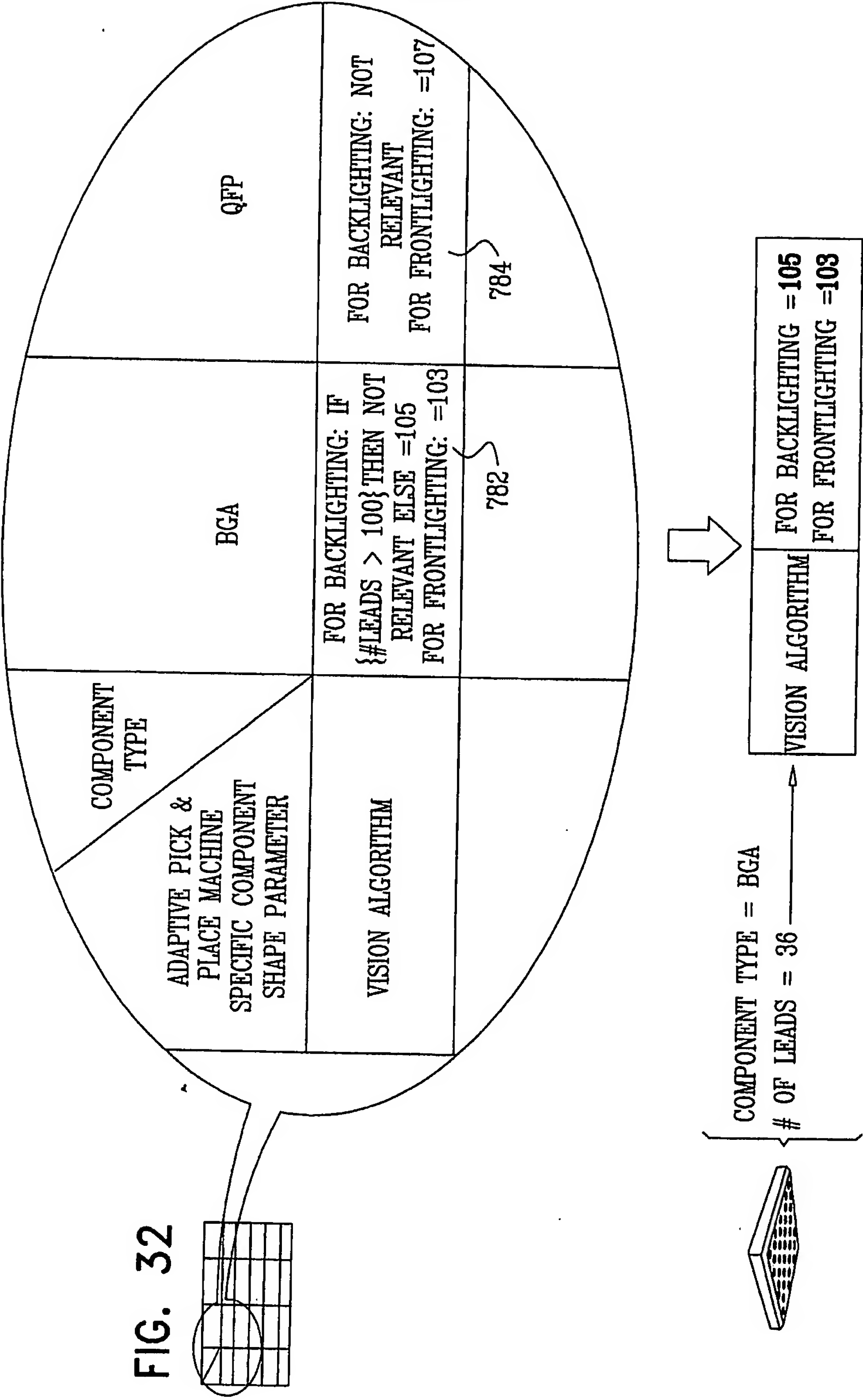
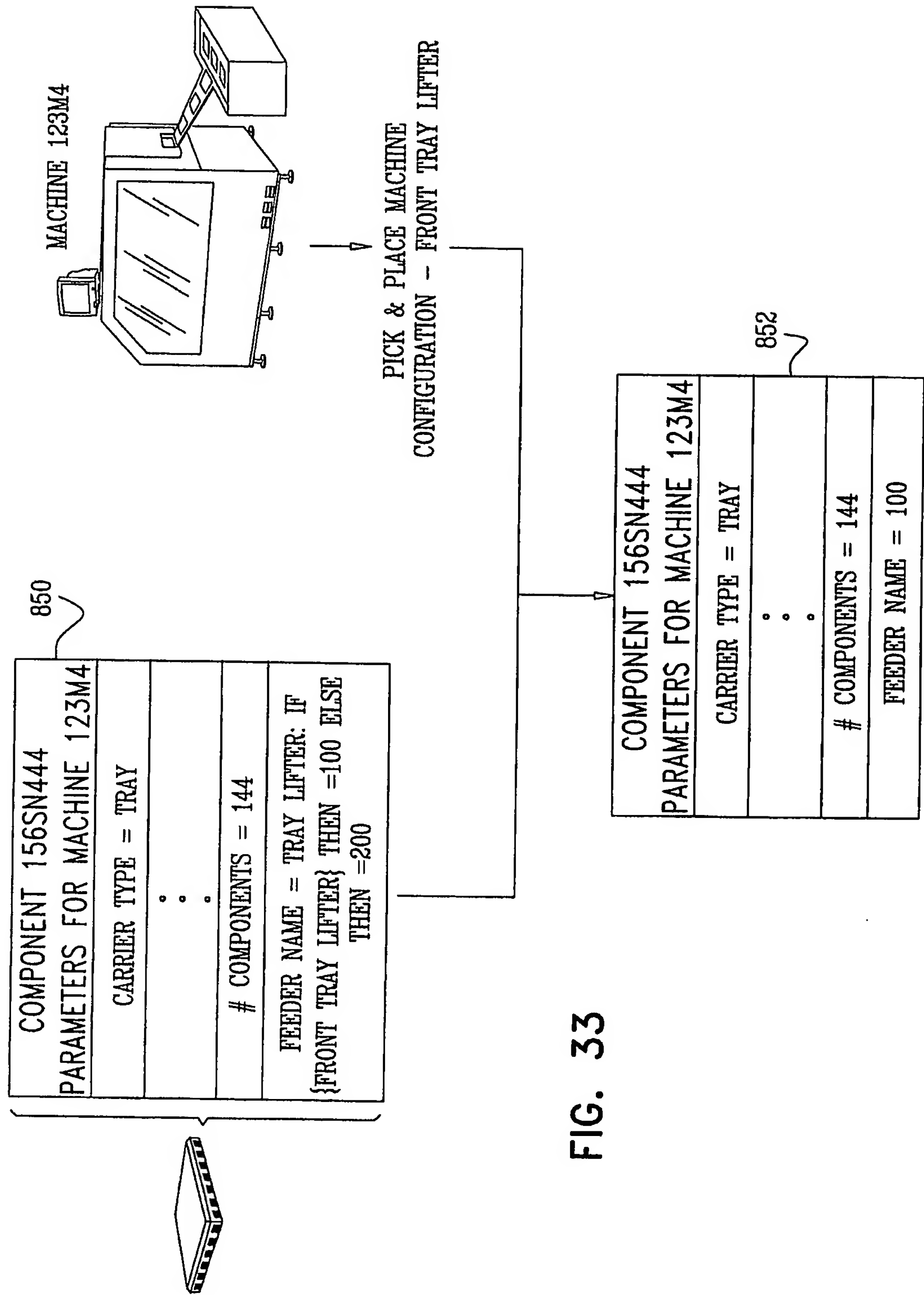


FIG. 32





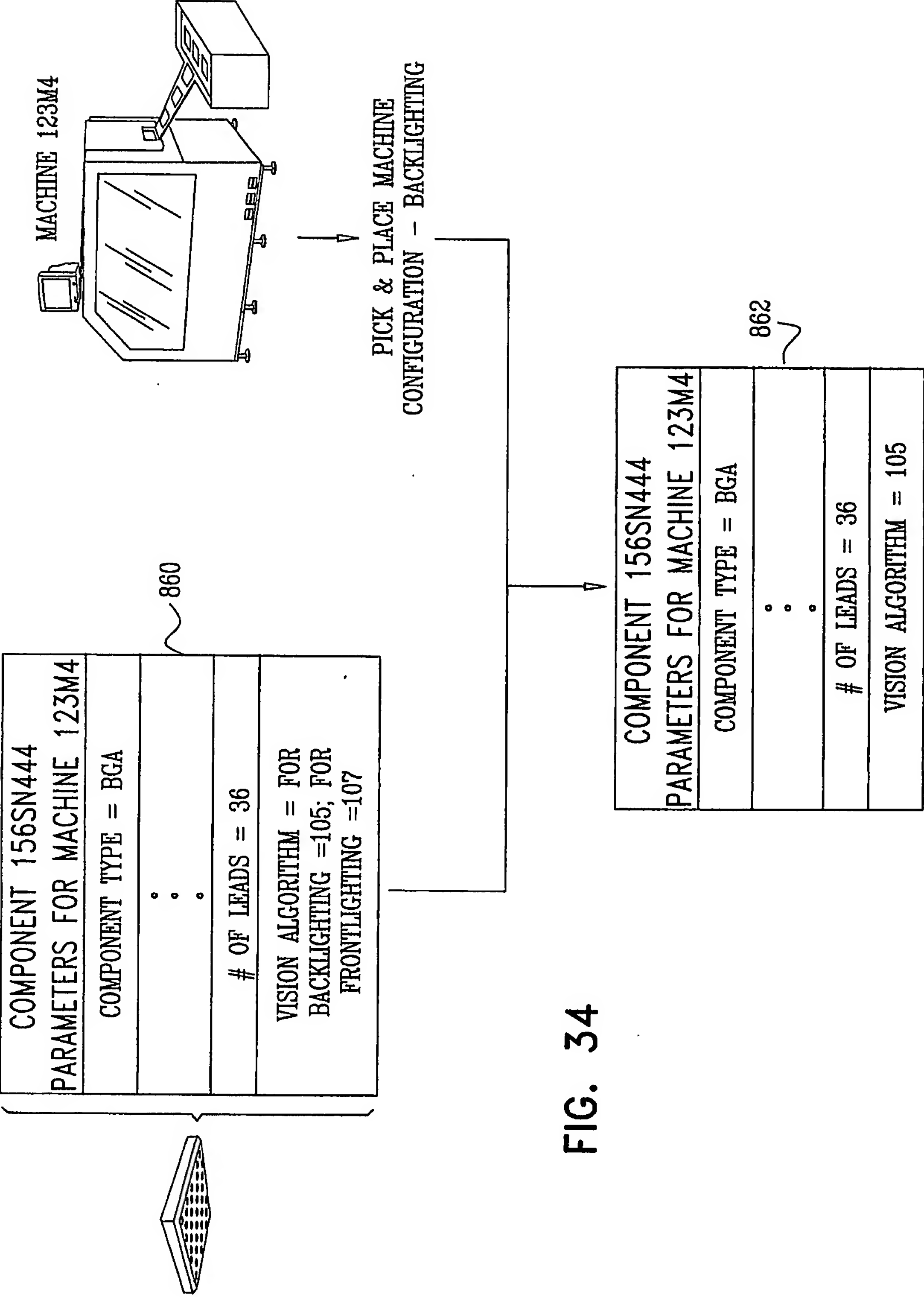
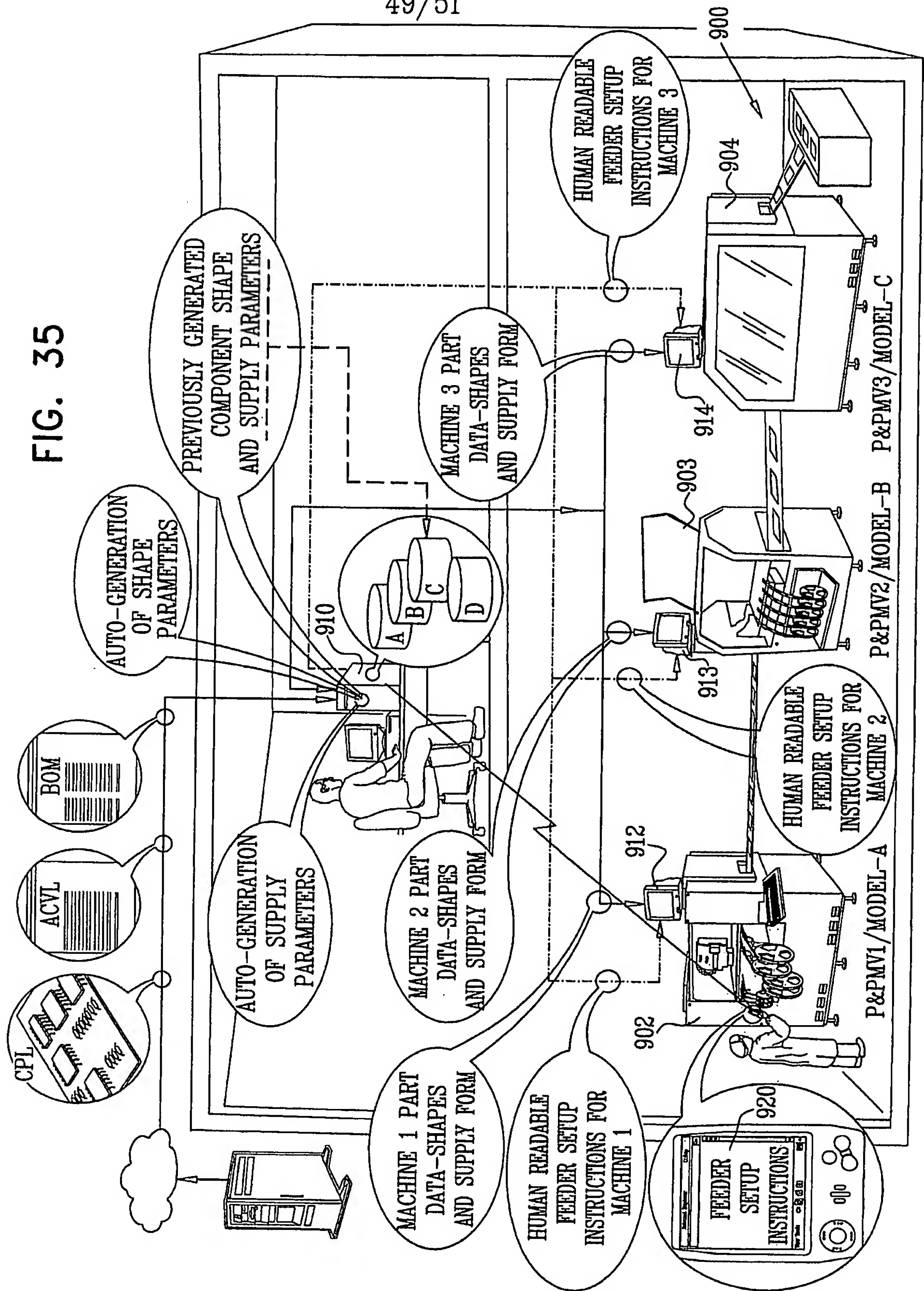


FIG. 34

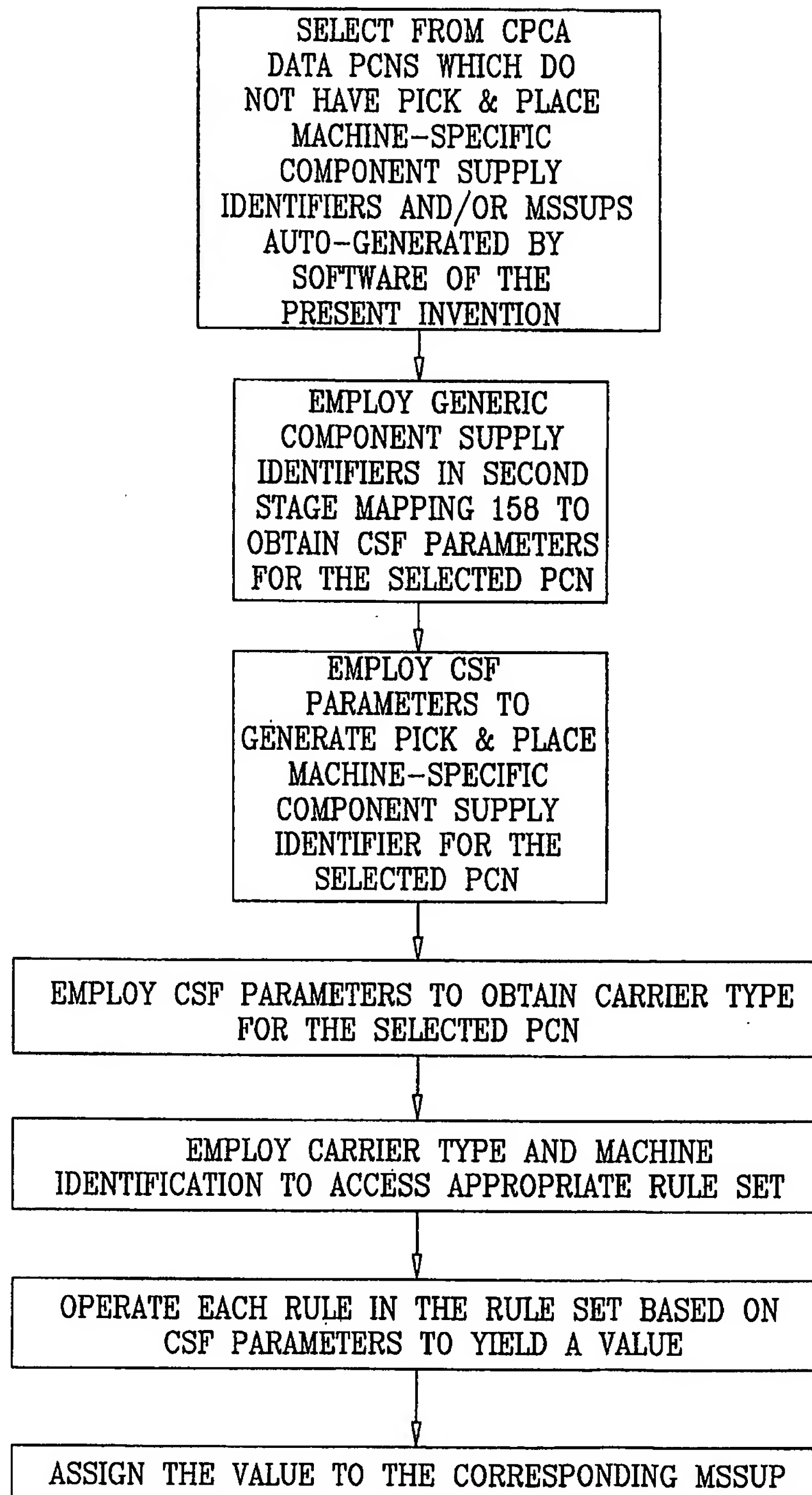
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FIG. 35



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FIG. 36



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FIG. 37

